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FOREWORD TO A SYMPOSIUM ON PUBLIC HEALTH TRAINING

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EACH profession, like each individual, is concerned with the training which equips it for service. The quality of professional service rendered is, in general, directly related to the quality of professional training. In the rapidly growing public health profession the American Public Health Association carries a responsibility for the continued improvement of training facilities, and the establishment of standards by which the professional equipment of sanitarians may be judged. This responsibility is not unlike that borne by the professional societies in the respective fields of medicine, law, engineering and dentistry. The Association has always recognized this; for new, important and constructive departments of public health work have consistently received its approval and support. The history of the various Sections of the Association shows the extent to which provision has been made for all the different types of sanitarians who make up the public health profession.

Every profession advances and develops as it wins the esteem and confidence of the public. The interest and welfare of the community at large—of all the people—is the only sound rock upon which to build. In matters of the public service, that which serves the people best will ultimately prevail. Public health is not for the benefit of any particular group, or sect, or party, or financial interest. It is a coöperative undertaking demanding the services of people who do many quite different things. In moving toward this objective, we need to appreciate the contribution of each type of sanitarian and to improve facilities for his professional training. We need also to recognize the contributions from the various fields of knowledge which constitute sanitary science and to develop the soundest possible training in these basic sciences. We recognize that ours is a broad, diversified and still expanding profession, therefore every type of service which really ministers to the public good should be given opportunity for development.

Since 1919 the Association has had a Committee on the Standardization of Public Health Training. At first it consisted of sixteen members. The first report was presented at the annual meeting in San Francisco in September, 1920, and published in this JOURNAL in April, 1921. In accordance with the recommendation of this Committee there was subsequently appointed by the President of the Asso-

ciation a continuing Committee of five members—one member retiring and one member being appointed each year. The first report of this smaller Committee was presented to the Association at Cleveland in October, 1922, and printed in October, 1923. The present issue of this JOURNAL contains the second report of this Committee. All three of these reports were prepared under the chairmanship of Professor Winslow.

The Committee has thus far concerned itself with reporting upon existing courses of study leading to specific degrees in public health, with a consideration of the time and preliminary training requirements under which these degrees are offered. It has not concerned itself with the subject matter of the curricula. Its current report presents in addition a rather careful study of the public health instruction in medical schools.

It has seemed to the Editorial Committee of the JOURNAL that it would be of interest to supplement the present report by a symposium dealing more intimately with some of the subject matter problems in the training of sanitarians. This introductory statement is in no sense a further expression from the Committee, but is merely intended to show the relationship between these problems and the work which the Association is already doing.

There is an encouraging increase in the facilities for Public Health Training. For example, the number of summer courses in Public Health to be offered during the coming months is greater than ever before. There is a general or almost universal interest in maintaining high standards. The time requirements and preparation demanded for the various strictly public health degrees reported upon by the Committee are reasonably well established.

We look forward to the time when public health administration the country over will be upon as well organized and definite a basis as school administration is at present. With the rapidly growing appreciation of health matters by the general public an extension of organized health administration is bound to develop. The maintenance of standards in public health training such that each degree or certificate will have a definite significance as to the professional accomplishments of the holder will contribute to this end.

The study of public health courses in medical schools shows that while a few schools still give little or no time to courses in Hygiene and Public Health as such, there has been an encouraging increase in Public Health instruction during recent years. We should recognize, however, that the chief problem of the medical school is to teach curative medicine. With the rapid growth of medical science, the crowded medical curriculum of the present day, and the tendency to reduce the amount of instruction in even the clinical specialties, there is a limit to the extent to which we may expect the undergraduate medical student to equip himself in the field of Public Health. The growth of purely medical science on the one hand, and the expansion of such public health subjects as Sanitary Bacteriology, Public Health Administration, Sanitary Engineering, Public Health Law, Vital Statistics, Health Education, etc., on the other, point to a growing appreciation of the distinction between clinical medicine and public health practice.

The establishment of Schools of Public Health parallel with medical schools is a further recognition of this distinction. The clinicians rightly insist upon the best possible training for men going into that field, and the general public also wishes to be assured, in so far as possible, that when a physician is called he will have had every possible advantage of training in the diagnosis and treatment of disease. This means that the medical sanitarian will secure most of his public health training *after* instead of *during* his medical course.

There is at the same time a growing tendency to demand specific public health training in the equipment of sanitarians. It is clear that this demand will be of

definite advantage to the public health administration of the future. We recognize the present lack of personnel trained in this manner. Twenty-five years hence the great majority of sanitarians may have specific public health degrees. But this should not lead us to the conclusion that it is now possible to separate the efficient from the inefficient by means of the possession or lack of any particular degree. Let us not confound the capable health officer trained in part in the school of experience with the "untrained" official or the political appointee. We attach great value to specific instruction in public health subjects. The number of men with specific training is increasing each year. But let us not be so foolish as to forget that this type of instruction has been generally available for only a relatively short period, or that there is a great group of efficient men who entered public health from medicine or other closely related fields following a sound training in the medical, biological or sanitary sciences who have been trained in the field, often under able state or national executives, and who have contributed to the advancement of public health, yet who lack a specific public health degree. It cannot be said to-day that any one degree is essential for successful public health administration.

We want to see that these public health degrees are significant. The Doctor of Public Health degree demands the most complete and practical training possible for public health administration regardless of the other qualifications of the individual upon whom it is conferred. In conferring this degree upon a physician it should not be assumed that since he is a doctor already a small amount of research in some special field is adequate to give him another doctor's degree. Likewise in the case of a man who approaches the Doctor of Public Health directly, on the basis of the Y plan suggested by Professor Sedgwick, or from the engineering field, we should insist upon all of the training—medical, technical, and practical—which is necessary for efficient professional service. Let us keep the standards high and definite for this and for the other public health degrees, but let us still recognize efficiency no matter from what particular combination of training it is developed.

In the development of efficient public health administration we might do well to take a leaf from the experience of the medical profession. It has long been recognized that although it is possible for the Medical Association to exert a most important influence upon the quality of professional training, it is impossible to control the award of the medical degree so completely that any man possessing it should be allowed to practice without passing a board of licensure. A man's efficiency can never be completely determined by his academic degrees. The only way to be sure as to whether he knows certain important facts is to ask him. New Jersey is an example of a state which has had a very satisfactory experience with its system of licensing health officers on the basis of an examination. The general adoption of such a procedure would provide a sound, fair and excellent means of raising local administrative efficiency. Clearly the object of our profession is the improvement of Public Health Administration and not the attempt to force any particular degree upon everyone who is allowed to enter the public health field.

These problems relating to administration are of primary interest. There are many sanitarians who are not administrators, however, and just as in the maintenance of life one vital organ of the body can hardly be said to be more important than any other, so for the interest of the public health and the welfare of the profession, we must recognize that the training of sanitarians in special fields is a problem quite as important as that which has claimed the attention of the Committee in its previous reports.

There are certain analogies between building a house and building the health of the people. Masons, carpenters, glaziers, designers, decorators, etc., each have something essential to contribute and the quality of the house will largely depend upon the ability of each specialized type of skilled worker. The superintendent of construction may have come to his present work from one of these groups with a preliminary training which has been supplemented by a definite body of knowledge and experience relating to the activities of his various workmen, but he is usually not as competent as the skilled worker in the latter's particular field. Because of the quality of the service rendered some of these skilled workers may indeed receive a larger financial return than the superintendent. The problem of training various kinds of specialists is quite apart from the training of the administrators and quite as important.

The editor of the JOURNAL in arranging the accompanying symposium presents for your consideration certain expressions of opinion regarding both the training for special fields of public health activity and the training in special subjects which is desirable in the preparation of sanitarians in general. Any such discussion seems at first to suggest, as did the Surgeon General's conference on the training of sanitarians, that adequate training in public health would require an interminable period of time to allow the student to cover all the varied fields. A careful consideration of the subject, however, like the discussion at the Washington conference, brings out the fact that we need both "general practitioners" of public health and "specialists" in particular departments. While the body of knowledge in sanitary science is rapidly increasing we are in a better position than ever before to lay out an adequate curriculum leading directly to public health administration or curricula leading to the development of the various special types of sanitarians.

The Committee recognized that each special group is concerned with public health training and it has recently unanimously requested from the Governing Council of the Association permission to add to its membership an advisory member from each Section—such an advisory member to be appointed by the section officers and approved by the section council. It is hoped that with this augmented personnel it may be possible to lay plans for more comprehensive studies in the future and to secure the assistance of each section for carrying out these studies.

Such material as is presented in this symposium suggests that the time may have arrived to further examine the content of courses of instruction. Schools and departments of public health have been established sufficiently long to make possible a very valuable survey of public health training, comparable to the surveys which have been made in engineering education, medical education, and dental education in the United States and Canada. Funds might have to be sought outside of the Association itself for such study, but as in the instances cited above the study should be made under the direction of the professional society. Much could be gained at the present time by a study of curricula, their content, their organization and arrangement, as well as the equipment necessary for adequate instruction. No definite plans for study have been formulated by the Committee on Standardization, nor has the Committee considered how such a study could be organized or directed. But it is hoped that—regardless of the particular form which the activities of the Committee may take—it will be able, with the augmented personnel indicated above, to expand the scope of its activities, to continue as truly representative of the Association, and to fulfil adequately the purpose for which it was appointed, namely, the advancement of the public health profession through assisting in the further improvement of public health training.

THE TRAINING OF LABORATORY WORKERS

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THE training of a public health laboratory worker divides naturally into several phases. First, there is the training which extends only through the technical stage, and which prepares a reliable worker for duties which are assigned and interpreted by a superior in the laboratory or by a health officer or other administrative officer. The next step involves a broader training and gives, in addition to the technical preparation, an appreciation of the place of the laboratory in the scheme of public health work. This training should give the ability to recommend, to initiate and to interpret the necessary procedures. The worker becomes a coöperative aid rather than a mere assistant. The experienced worker, having attained this ability, is prepared to become a laboratory administrator with supervision of other workers.

The highest phase is the training which fits those of the right mental qualities to take advantage of the opportunities for investigative work inherent in any public health organization. The opportunities may be limited by force of circumstances or they may be extensive. The ability for this type of work is largely native and training serves mostly in making its application possible.

A brief survey of the major activities of a Public Health Laboratory, progressing from the simple to the more complex and from those activities carried out by the smallest laboratory to those of the largest municipal or state laboratories will serve to illustrate the grades of training required.

Bacteriological and Serological

Throat cultures for B. diphtheriæ
Sputum for tubercle bacilli
Blood for Widal reaction.
Blood for malaria
Discharges for gonococci
Milk—bacterial colony count
Water—bacterial colony count—B. coli
Meningeal infections—etiology
Blood—cultures, typhoid, etc.
Feces—Ova. intestinal parasites
Feces—typhoid, paratyphoid, dysentery
B. diphtheriæ—virulence testing
Wassermann—reactions, etc., syphilis
Other complement fixation reactions
Sputum—pneumococcus typing
Anthrax
Glanders
Special genito-urinary, spirochetes, etc.
Shell fish
Rabies—Negri bodies—animal inoculation
Typhus fever—Weil-Felix reaction, etc.
Foods—purity—food poisoning by bacterial products and infection
Special water, milk and sewage as purification controls, etc.
Standardization of disinfectants
Special diagnostic procedures; miscellaneous infections

Chemicals

Milk and cream—fat—total solids
Preservatives
Water—ammonia—chlorides, nitrates, nitrites, etc.
Examination of meningeal fluid
Foods and Drinks: sophistications or adulteration, preservatives, coloring matter, harmful ingredients
Special examinations: toilet articles, drugs, patent medicines
Water—sewage purification indices

Preparation and Refining of Biological Products

Bacterial vaccines, especially prophylactic, typhoid, etc.
Diphtheria antitoxin
Vaccine virus
Schick toxin, toxin-antitoxin
Tetanus antitoxin
Pasteur treatment
Antipneumococcus serum
Antimeningococcus serum, etc.

Investigative Work

Epidemiology
Etiology
Prophylaxis, specific including tests of susceptibility
Control of foods, etc.—pasteurization
Specific therapy—improvements, new products, etc.
Disinfection and sterilization procedures, special applications.

Administrative Work

Direction, specific, general.

The training required for the grade of the simple technician who may be trusted to carry out only the few simplest procedures is very moderate in amount but should include a college course or its equivalent, with a thorough training in the elements of chemistry and physics. For the higher technician it is necessarily broader. In general, it comprises a thorough knowledge of general bacteriology and serology with some additional training in chemistry and physics.

The work of a larger laboratory leads naturally to grouping of related procedures and specialization of the worker. If the chemical laboratory is included in the public health laboratory, any work above the simplest procedures requires chemists of specialized training. The production of biological products leads to further specialized procedures and the requisite knowledge of biological chemistry.

Even the training for the more responsible technicians should include instruction in the broader principles of hygiene and public health. Even a small knowledge of preventive medicine enables the technician to do more intelligent work and to take a greater interest in his duties. For those who hope to attain the higher executive positions a medical education is very desirable but that this is an absolute necessity cannot be maintained. A number of examples can be cited of those whose training has been more in the general sciences but who by contact and experience have attained the necessary medical viewpoint.

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THE TRAINING FOR THE SANITARIAN OF ENVIRONMENT

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THE training of any individual, in any direction, is a subject which a layman, such as the present writer, must approach with considerable diffidence and caution. Only a cursory acquaintance with the varieties of modern pedagogic experience and hypotheses is sufficient to acquaint one with the dangers of attempting to dogmatize about the necessities or advantages of various educational programs in even the simplest training of the mere artisan or technician. When this attempt is extended to the definition or elaboration of a program of training for that elusive individual whom we have been in the habit of calling the "sanitary engineer," we indeed enter upon the charting of a course aimed to avoid the Scylla of the structural engineer and the Charybdis of the laboratory devotee. And the attempt is no less dangerous than was the earlier classical task. The writer's only excuse for entering upon such a task, doomed to almost certain attack, is, on the one hand, the editorial request, and, on the other, a distinct interest in a difficult but important problem.

The term "sanitary engineer" has always appeared to the writer to be neither descriptive of nor helpful in identification of function of the individual so labeled. For our present purpose, therefore, we shall restrict our discussion

to the form of training desirable for that individual whose professional purpose it shall be so to modify the forces of nature as to lead to the maximum mental and physical advantage of other individuals. Such an individual shall stand in the same relation, with respect to the improvement of environment, as the physician does in respect to the improvement of the individual. With such a definition before us, we must necessarily shift some of the earlier emphasis, in training of engineers, from materials to men, at least as far as the function of engineer in public health is concerned. Such an adjustment of conception is made necessary by the advance and change in knowledge with reference to both the individual and his environment and their effect upon each other. Whereas orthodox "sanitary engineering," itself born of the necessities of only one period in our public health progress, was concerned primarily with problems of water supply, sewerage and refuse disposal, future "public health engineering," or whatever else posterity may care to name it, will be extended to embrace all those forces of land, air and water which have influences upon the human organism. Some of these forces and their effects we understand, and many others we shall learn to understand as time goes on. Obviously, therefore, the future function of engineer in public health should be wider, rather than narrower, than that of the "sanitary engineer," even though nomenclature may, and probably will, change.

With the expansion in function of the sanitarian of environment, there must necessarily come a change in both the content of and the time for the training of such individuals. Such an analysis of future requirement leads the writer to the conclusion that the collegiate course must be more than four years, with a probable minimum of six years, for all students whose purpose it is to extend the years of life of man, and to make those years less irksome by an attack on the physical world in which he lives. Such an extension of time of training appears necessary, if we assume that there should be added to the student's understanding of the mechanics of his profession, a conception of the human organism upon which his accomplishments are to operate.

That this understanding of the forces of nature should be reinforced by an understanding of the mechanism of man appears to the writer to warrant no further argument. The training, therefore, presupposes adherence to the primary courses in chemistry, biology, physics, geology, mathematics, etc., supported by the secondary professional courses in materials, structures, designs and surveys. To these should be added what the writer presumes to call the "coördinating courses," or those courses which are designed to correlate the purposes of the more fundamental subjects, and to establish their position and force in the cosmos upon which the student is to enter. And might we not even hazard the suggestion that elementary discussions of the anatomy, physiology and pathology of man should find a place in the training of the engineer, as it now does, in necessarily more elaborate form, in that of the physician, whose future lies in the field of health promotion and prevention of disease?

The writer is willing to confess that the specifications above presented are intended to lead the student to the development of an art of thought, to the application of principles and to the understanding of man; but he is unfortunately aware that such specifications may, in their generalities, apply to engineer, physician, biologist, or physicist. But, after all, the underlying principles and content of training are much the same for all. The emphasis of specialization for the engineer in public health should come after the training in basic principles has been met. This will necessarily result in longer periods of collegiate training, but should also bring about a more successful application of engineering principles to public health accomplishment.

THE PLACE OF VITAL STATISTICS IN PUBLIC HEALTH TRAINING

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IN ANY special branch of public health work the administrator, the teacher or the investigator is continually facing the tasks of collecting, arranging, analyzing and interpreting statistical information concerning the vital events in the lives of men. Experience has indicated that the results of his labors are commonly equally unsatisfactory if the worker is lacking either in familiarity with the biological phenomena or the social relations which the data describe or in mathematical competence to study them adequately. Although these remarks may seem gratuitous they are invited by the too frequent appearance in public health literature of statistical studies by authors of mathematical competence who do not fully understand the natural history of the phenomena which their data characterize or by biologists who are not aware of pitfalls which lie in the path of the unwary biometrician. These considerations are basic in planning our public health curriculum.

Apart from the needs of the professional statistician, the importance of teaching vital statistics as an integral part of the public health curriculum can scarcely be exaggerated. Whether specializing in the laboratory sciences, in sanitary engineering, or in the social or administrative fields, early contact with the data upon which the principles of public health rest press upon the student a realization that at every point in preventive medicine he deals with problems which concern the group rather than the individual and are more readily soluble by the extensive method of the statistician than by the intensive method of the physician. He soon discovers that he must know at least the elements of the statistical method or he cannot grasp the proofs of the principles. It is no exaggeration to say that every student of the public health specialties must acquire at least an introductory knowledge of statistics and the statistical method. Without it he is seriously handicapped.

The starting point in a comprehensive program of statistical training is the curriculum of general courses in the medical sciences and in the principles of public health. These may then be followed by special courses in the elements of vital statistics and by advanced courses in mathematical methods and in the manipulation of statistics as they are followed by advanced courses in bacteriology, immunology, industrial hygiene, epidemiology or in any other specialty for the student of another bent.

The experience of some decades has indicated that most of the statistical work of public health—in research as in administration—can be accomplished by the use of relatively simple arithmetical procedures and by persons unacquainted with advanced statistical methods. It is recognized, of course, that this is no valid argument for the maintenance of the *status quo;* nor is it advanced for such. We have too many illustrations of the value of advanced statistical attainments in the elucidation of difficult problems in etiology and epidemiology. And too many problems which call for precise quantitative analysis come to mind. The indications are, however, that there is comparatively little need outside of actuarial and general research fields for a large number of statisticians trained more thoroughly in the methods than in the results of vital statistics. In the immediate future the energy of teaching public health statistics must be focussed more sharply upon development of the pedagogy of the first rather than upon the context of the advanced courses. The

first need is for public health workers sufficiently trained to conduct careful collections and quantitative as well as qualitative analyses of statistical data as aids in administration; the second need is for workers who can carry the analyses further than concurrent administrative needs warrant.

A first course in vital statistics should include discussions of the nature of vital statistics and their history; the theory of measurements and their precision; the concepts of normal variation and probability; the theories of correlation and of causation; the outlines of static demography—births and birth rates, marriage and divorce, morbidity (sickness and physical defects); legislation and efficiency of registration; mortality, the classification of deaths and their principal causes; occupational and climatic influences upon morbidity and mortality; abridged life tables and longevity. Such a course can be presented in some fifteen one-hour lectures and an equal number of two-hour laboratory exercises with statistical material. The student may be expected to cover at least one elementary textbook on the principles of vital statistics and a selected bibliography in statistical journals and to become familiar with health department reports and the publications of the U. S. Census Bureau.

A second course, of the same length as the first,* may cover in greater detail the methods of tabular and graphical presentations; the use of mechanical devices in the statistical laboratory; the careful study of population growth, birth, sickness and death rates, secular and nonsecular trends in morbidity and mortality and the principal causes of each; the standardization of rates; the calculation of simple correlation coefficients and ratios; the method of partial correlation; curve fitting; and the graphical and statistical calculation of abridged and complete life tables. The student should attain familiarity with special texts on statistics. He should also learn to use the official reports of the leading countries of the world and the source material in public health journals.

It is probably sound policy to demand of every candidate for a graduate degree in public health that he cover these first courses in vital statistics. They should be offered by persons whose principal interests are in the work of the department or school of public health. Whether courses of more advanced nature than those which have been described should be presented in such a department or school, or in a department of biometry and vital statistics, or in some other division of a university must be determined largely by local conditions and policies.

No discussion of the teaching of vital statistics would be complete without even brief mention of the importance of an introductory treatment of the statistical method in the medical school. Each year more and more emphasis is being placed upon the preventive phases of medicine in the curricula of certain leading schools. The crowded condition of time schedules precludes for the present the introduction in some schools of courses in public health. Nevertheless, a place should be provided for a short series of lectures on the statistical method, as much for its value to the future practitioner as for its function in recruiting the personnel for the public health campaign.

In conclusion, emphasis may be placed upon the necessity for training statisticians to appreciate the cautions with which biological data must be treated. Vital statistics are rarely complete and are never free from the influences of the hands which have collected them or the minds which have moulded them. They do not come straight from nature. They cannot be treated by *a priori* logical methods alone. Familiarity with their sources and understanding of the phenomena of the organic world which they describe are the starting points for the

*The two courses outlined here may sometimes be combined to advantage to constitute a single course, particularly if it can be run continuously through the period of an academic year.

accurate study of vital statistics. No amount of training in statistical analytics can compensate for ignorance of normal or pathological physiology; no intuited knowledge can replace thorough acquaintance with the subject matter of parasitology or sociology. There is no mathematical short-cut to elucidation of the problems which arise in administration or research; nor is there any substitute for a reasoned interpretation of phenomena.

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THE EDUCATION OF THE PUBLIC HEALTH NURSE AND THE DEMANDS OF THE FIELD

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WHAT, specifically, is the field work demanding in the equipment of that indispensable messenger of health to the individual home—the public health nurse? The importance of this question in determining standards of training is readily conceded. The Vocational Department of the National Organization for Public Health Nursing occupies a strategic position as an observatory of the field and as a clearing house between supply and demand.

A cross-section of the appeals for public health nurses which come pouring in from villages, counties, municipalities and states throughout this country and also from some foreign countries reveals a diversity of wants, and gives quite a fair picture of the situation as a whole. Local organizations are showing a marvelous propensity for knowing exactly what they want. The situation is quite hopeful, in that the requests show an ever-increasing appreciation for adequate public health nursing preparation. We hear less and less frequently of wholly unprepared nurses being urged by local communities to undertake the safeguarding of so precious a thing as their community health. This is not altogether due to an increase in supply, but is partly due to the publicity given to failures, although we like to think that the publicity given to successful services has had something to do with it.

We may be on the threshold of the age of generalization in public health nursing, but the hue and cry is still largely for specialists in the various phases of the work. Public health nursing, itself a specialty, is seen in this cross-section to be a combination of many specialties. Even generalization appears to be a specialty in its own right. At present the trend seems to favor more and yet more specialties, instead of a reduction as we might expect, with other health workers as nutritionists, psychiatric social workers, and health educators constantly coming into the larger field of public health. True, large city organizations are welding together their various services, but by so doing they create a demand for specialized supervisors that as yet cannot adequately be met. Small communities as a whole cannot afford more than one worker hence some of our specialties present chameleon-like propensities in the way they "change color" as is evidenced by the demand for school nurses, competent not only to inspect and follow up, but able to teach health and help the teachers teach health as well as develop a nutrition program. We are not meeting the requests for this type of school nurse fully, and yet much better than we are able to meet some other demands. For instance, we have been trying for several months to find three available nurses who are experts in tuberculosis public health nursing. The report on Nursing and Nursing Education in the United States by the Committee appointed by the Rockefeller Foundation, points out that

there are wholly inadequate facilities for training this group. On the other hand, we are wondering if we have not become a little complacent about the lack. The situation regarding supply is complicated by the newer development of nutrition service as comparatively few nurses have had this special training. More opportunities are needed where nurses can get this equipment. They want it.

The Vocational Department has not by any means emerged from the avalanche of requests that have come in for specialized maternity and infancy nurses, created by the Sheppard-Towner programs throughout the country. The demand is for lone workers for isolated communities, which in many ways are known to require greater competency than city work. The demand is also for specialized supervisors to serve in state educational and supervisory field work or in large city organizations. An interesting "brand" of this specialist is the type equipped for teaching midwives, particularly in the southern states. Outside of what the New York Maternity Center Association is doing in giving opportunities for three or six months of added experience to nurses, we know of no special effort that is being made to cope with the demand. It is to be deplored that so many local services see only the work within the compass of their own territory and lose an important educational opportunity in developing workers quite definitely for the larger field of public health nursing.

Industrial nursing is a story in itself. A one thousand word allotment could easily be exhausted upon it. It goes almost without saying that no field presents a greater need than this for nurses with a broad social point of view and public health preparation. But the industries fail to recognize this need, except in comparatively few isolated instances. Consequently, they are the greatest offenders in using unqualified personnel. We have all been saying for a long time: "Something ought to be done about it." We want industrial concerns to see public health nursing as a community health service—not just as a palliative "institutional" service. But why propagandize for a higher standard of service when even now we are unable to meet the small demand from those industries in mill town, mining camp, and stone quarry that do see the community aspect of public health nursing? Ninety per cent of the nurses who consult the Vocational Department profess an interest in getting into this field with about one-tenth of this number having either the equipment or an appreciation of what the service should be. And only about one-tenth of one per cent of our requests for public health nurses are from industries.

Our largest number of unfulfilled requests for nurses are from the rural fields. City staffs are largely fed from the group of recent graduates of the Hospital School for Nurses. For the special fields of mental hygiene, preschool and orthopedic public health nursing as well as venereal disease and the general dispensary service (one of the newest fields to covet public health nurses) the demand is small, but the supply of especially qualified nurses seems yet smaller. In trying to locate an available, interested and equipped nurse for follow-up poliomyelitis work for a Visiting Nurse Association in a middle western city we wrote twenty-six letters of solicitation before we were rewarded with success. The group that passes through the Vocational Department is representative of the whole since we do not restrict our service to those nurses seeking positions. We believe with Aaron Shapiro that often "The good people are already in jobs and if you want them you have to go after them."

So it is that just as life itself becomes more complex with each forward stride of civilization, nursing education presents a more devious network of problems just as it reaches its highest attainment of standards. Mark the problem of providing the broad basic foundation in educational and public health principles in what is still a pioneer period and for a group

that still gives evidence of uneven preliminary educational and general nursing qualifications, not to mention differences in native ability. Add to this the problem of equipping the selected groups in a score or more of specialties, many of which are so new that standards and practice fields are still undeveloped and expert instructors are still lacking. Little that is taught in the preliminary school of nursing carries over into the public health field, other than nursing technique, a knowledge of pathological conditions and the basic sciences. But, thanks to the Yale experiment, we hope that the future will bring a revolution in the instruction in the underlying nursing courses for an appreciation of nursing as a community service. In the meantime we will continue to do our bit in encouraging public health nurses to go into institutional work and by urging administrators and instructors in nursing schools to add public health nursing to their equipment. And aside from the technical equipment of our "product" we must look to stabilizing the entrance requirement on the broadest possible basis.

When we analyze the personal characteristics which are wanted in the public health field we see nothing short of a problem in eugenics. We can hope for more and better courses in psychology and sociology as part of all nursing curricula, that nurses may better adjust themselves to local conditions and understand why people are what they are, and why they want what they want. Despite all we have said about an increasing appreciation for specialized preparation on the part of the organizations, in their eyes the "geographic merits" of the nurse are still too important. "East is east and West is west" is still too often emphasized and interstimulation among the peoples of the North and South has not yet entirely erased the Mason and Dixon line as far as supplying the need for public health nurses is concerned.

The census that is being taken by the National Organization for Public Health Nursing will doubtless bring out some interesting data for future deductions that will affect the specialized preparation of public health nurses. Now we glibly say, without real basis for our opinion, that 50,000 public health nurses are needed, that there are actually about 12,000 public health nurses at work in the field and that about 3,000 of these have had special formal public health instruction in one of the universities or colleges. We would not minimize the value of supervised experience with well organized local public health nursing associations. Public health nursing courses at best are not much more than a general introduction and stimulation for the new recruit and a balancing force for the experienced public health nurse.

This discussion would not be complete if we failed to emphasize the responsibility of local organizations to "look to their guns" in the stabilization of their services as far as their internal organization, their finances, their program, their conditions of work, and the character of their supervision are concerned. Public health nurses are expected to interpret all manner of public health standards to their organizations but they cannot do it all. Here is one place where we are interdependent upon the allied groups of skilled health workers with whom we believe we are keeping in step. Nurses who have the vision and who have taken the time, often at great expense which they could ill afford, to get special preparation and who give unstintingly of themselves, need the encouragement of public opinion which can best be developed by the lay groups. They also need an adequate salary to make their investment worth while and they need the opportunity for continuous growth through sympathetic and appreciative boards and competent officers "higher up." Nurses want and need these things; our observations show that they do not always get them. And what of the effect of unstable services upon our future supply of qualified workers!

SOCIAL SERVICE TRAINING

Mr. Homer Folks

State Charities Aid Association, New York City

THE subject of "Training for Public Health Work in Its Various Aspects" is indeed a far-reaching one. Public health is a many-sided problem, and in every phase there must be trained service, if the results are to be sound.

In the field of health work two sorts of specially trained social workers are essential in any broadly conceived health undertaking:

a. Persons trained in family welfare; and

b. Persons trained for the duties of an executive secretary of voluntary health associations.

Health and relief are intimately related, though we sometimes forget it. Any public health nurse, any clinic, any health officer, soon finds among his clients, many individuals and many families whose economic status, or whose lack of social adjustment, makes it impossible to secure any useful results in regard to health, without, at the same time, putting through a much more comprehensive and far-reaching readjustment. It may be necessary to call upon the whole range of welfare authorities and local and state institutions. Nothing is more striking than the utter helplessness of a public health nurse or a health officer when brought face to face with such a complicated problem. They may not even see the problem, may not even realize that they are helpless, but, in fact, they are little more than spectators. Training for what is variously called "Social Service," or "Family Welfare," or "Case Work," is to be had, fortunately, in a number of schools of social work, which are rapidly developing adequate curricula and faculties of exceptional experience and teaching ability. Case workers have been slow sometimes in recognizing the health and medical aspects of their work, but not so slow as public health nurses and health officers have been in recognizing the necessary welfare and relief aspects of their work.

For the second sort of social training required in health work, namely, the well-rounded training of an executive secretary, much less provision has been made. The job, as such, has only recently been recognized. To be an efficient executive secretary of a local tuberculosis or public health association, or committee, is to meet an astounding variety of community problems. It does not require much actual training in the scientific aspects of public health, other than acquiring the utmost respect for scientific authority, and a clear and constant recognition of the fact that no single step can ever be taken, involving medical considerations, without the knowledge and approval of an adequate authority in those lines. It involves an equal respect for technical training in numerous other related fields—law, engineering, teaching, etc., etc. In fact, the executive secretary of a health association must become, primarily, an expert in securing and utilizing expert services, and, second, an expert in the development and utilization of public opinion. The Tuberculosis Institutes, held from time to time by the National Tuberculosis Association, are a valuable beginning in special training in this field. It is reasonable to expect, however, that the various schools of social work will recognize the necessity of a broad and varied training for these general executive positions, as well as for the more highly specialized family welfare service.

TRAINING FOR HEALTH EDUCATION AND PUBLICITY

E. G. Routzahn, Fellow A. P. H. A.
and
Mary S. Routzahn
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LET us suppose a two-years' course in public health administration. Of this time, thirty-six hours for classroom work in health education and publicity does not seem too much to expect in view of the conviction generally held by public health workers that education of the public is essential to putting over their programs. However, since even thirty-six hours is more time than has yet been devoted to the subject in a public health school, we modestly requisition only this small part of the two years of study, and propose that it be laid out in three courses. Incidentally, of course, an allowance of two hours for preparation would go with every hour of classroom work.

Public Speaking

A twelve-hour course in public speaking might well come first. The student could then continue throughout his stay in the school to use opportunities for practice in applying the principles of preparing and delivering talks, of which he would learn a few fundamentals.

This course, under a competent instructor, would mean much more than preparation for platform speaking. It would prepare also for participation in discussion, committee meetings, staff meetings and personal conferences.

Writing

Writing on health topics would be the second course. The students would be given at least six written assignments and the class hours would be devoted to discussing what was written and to explaining principles of writing. The assignments should include writing news stories and feature articles for newspapers and preparing folders or pamphlets of health instruction.

This course would by no means attempt the impossible task of training students in twelve lessons to write interestingly, clearly and effectively about public health. Neither could it give them facility in writing for newspapers in the way in which editors want articles written. If the student gained some appreciation of the difference between interesting and dull writing, between merely expressing information on the one hand and impressing it on the mind of readers on the other, the course would accomplish its purpose.

Both the writing and public speaking courses furnish a background for other varieties of publicity in that they suggest principles and methods for selecting and analyzing subject matter for public presentation and methods of approach to the public.

Outline of Publicity Methods

The third twelve-hour course would give a review of the avenues of public information and the principles involved in getting information into use. Perhaps one lecture and one assignment each would be given to:

1. Editing of a health department bulletin.
2. Designing of printed matter, whether for covers or type pages of folders and booklets, or posters.
3. Preparation, collection and use of various forms of graphic material, such as motion pictures, slides, models and charts.
4. Newspaper publicity including relations with newspapers, methods of getting into print and the specific requirements of material for the different departments of

the newspapers, as news, feature articles, special departments, etc.

5. Teaching health to school children including the review of chief methods in use for promoting health habits.

This would leave two sessions in which a lecturer might hope to give to students some realization of the fundamental principles of planned publicity and their application to the specific problems of teaching health through the avenues which are open to a health official.

If the students were attempting to develop skill in the use of each of these avenues of publicity, a year of intensive study might well be devoted to each of the five topics named above. Such specific details as to how to write a news lead, an understanding of news value, making a page of type inviting and easy to read, and designing slides to tell a story in an instant, are matters involving a great deal of specialized technical information. The education of school children in health habits is, of course, a big enough subject to spend one's life upon.

Our health administrator may have an aptitude for these things and an interest in picking up information about them. If he does, he can, no doubt, find the introduction to the subject in the thirty-six hour courses which we have suggested sufficient to start him on explorations of his own which will lead to obtaining through practice, observation and reading all that he needs. If he has no such liking or ability in this field, however, he may at least learn to know good publicity when he sees it and to know how to go about getting it.

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REPORT OF THE COMMITTEE ON STANDARDIZATION OF PUBLIC HEALTH TRAINING

Read before the Public Health Administration Section of the American Public Health Association at the Fifty-second Annual Meeting at Boston, Massachusetts, October 8, 1923.

THE present report of your committee is made up of two parts. The first section of the report has been prepared in compliance with the resolution of the association at its last annual meeting requesting a report upon the public health courses in medical schools with a consideration of "the time now devoted to such studies . . . their adequacy, the textbooks recommended . . . and a model course of instruction in public health and preventive medicine." The second part of the report will present data regarding the courses in public health offered during the last academic year.

PUBLIC HEALTH COURSES IN MEDICAL SCHOOLS

The Council on Medical Education and Hospitals of the American Medical Association publishes each year valuable data regarding medical education in the United States. These reports describe the graduate courses in public health in the few medical schools where such courses are given (11 in 1922) but do not aim to furnish information regarding the extent of public health teaching in the regular medical curricula. At the request of this committee Professor Ira V. Hiscock of the Yale School of Medicine made a study of the public health courses given to medical undergraduates in 57 Class A medical schools of the United States, as described in the 1922–23 bulletins of these institutions and supplemented by correspondence. Medical schools which gave only the first two years of the course were omitted from the study. The committee wishes to acknowledge the important service of Professor Hiscock from whose study this part of the report is made up and to

acknowledge also the coöperation of the officers of the colleges and medical schools in question.[1]

The Association of American Medical Colleges prescribes a curriculum calling for 3,600 to 4,400 hours in four calendar years. The division of hygiene and sanitation is allotted from 3 to 4 per cent of the total hours, or 108 to 176 hours for the entire course. This is the smallest allotment of the nine main divisions of the course, comparing most closely with the 3½ to 4½ per cent suggested for biochemistry, and 4 to 5 per cent for the two divisions of pharmacology and obstetrics and gynecology, while general medicine rightly receives the highest allotment of 20 to 26½ per cent. This amount of time is considerably greater than that specified in the earlier schedule published in 1922[2] in which the subject of preventive medicine and public health appeared as a subdivision of pathology and bacteriology and was allotted a minimum of 1½ per cent of the total.

Number of Courses.—Most of the medical schools give only one prescribed course in public health to medical students, although eight of the schools have two courses, five have three courses, and two have four courses. Wherever more than one course is given, however, the subject matter and total hours usually correspond to subdivisions of the single courses which are more common. Fourteen institutions offer elective courses in public health, chiefly but not entirely for fourth-year men and often involving practical field work or research. Undoubtedly, the interest of the medical student in public health fields will grow as increased opportunity for elective work is given.

Scope of Course.—The prescribed public health courses consist for the most part of lectures and demonstrations, although 20 institutions report lectures only varying from the minimum number of 8 to a maximum number of 110, with a median of 34.

Considering the entire group of medical schools, it is found that the total number of hours given to public health courses ranges from no special course in one school, and 8 hours in another through such a wide range as 22 hours in Johns Hopkins and 24 hours in Ohio, to 149 hours in the University of Georgia, over 150 hours in the University of Buffalo, 156 hours in Syracuse, 160 hours in Western Reserve, and 210 hours in Tulane, with a median of 61 hours in the University of Minnesota. Information available for eight schools in which public health courses comprise lectures, laboratory and field work indicates that about half the time is usually spent in lectures. Table 1 indicates the type of courses given and the amount of time required for the work.

TABLE 1.

PUBLIC HEALTH COURSES GIVEN IN MEDICAL SCHOOLS CLASSIFIED BY YEAR GIVEN, TYPE OF COURSE, AND TOTAL HOURS 1922-1923.

Year given	Total schools	Lect. only	Lect. and field work	Lect. and lab.	Lect. and conf. or quizzes	Lect. lab. and field work	Lect. conf. lab. and field work	Total Hours		
								Less than 54	54-80	Over 80
2	8	2	1	1	1	2	1	2	4	2
3	20	8	3	3	0	2	4	6	5	9
4	14	4*	5*	1	3	0	1	9	2	3
1, 2, 3 and 4	1	1	0	0	0	0	0	0	0	1
2 and 3	4	2	1	0	0	1	0	0	3	1
2 and 4	2	1	1	0	0	0	0	2	0	0
3 and 4	4	2	2	0	0	0	0	0	3	1
2, 3 and 4	3	0	0	0	0	2	1	0	1	2
No regular course	1	0	0	1	0	0	0	1	0	0
Total	57	20	13	6	4	7	7	20	18	19

*Given in 5th year in Universities of Nebraska and Oregon.

Best Year for Course.—Public Health courses are given in the second year in eighteen schools, but in ten of them these courses are preliminary to subsequent and more advanced work in preventive medicine. In the fourteen schools where more than one public health course is given the first is usually limited to general hygiene while later courses deal with public health and administration. In one school instruction in hygiene is given each year; in three schools it extends throughout the last three years.

Tables 1 and 2 show wide variation as to the time when courses in public health are given. This is probably due to a difference of opinion as to the particular place for such courses and also to the difficulty in adding these comparatively new courses to a crowded curriculum. In most schools the course is given in either the third or fourth year, doubtless because it is felt that the student will have a better approach to the subject with a solid background of pathology, physiology and medicine.

In choosing between the third and fourth year we should remember that in most medical schools at present the student is just entering the wards in the third year. Naturally he finds this work more fascinating than attending public health lectures or taking field trips which are likely to be considered as outside the realm of his real medical activities. These considerations and the experience of departments which have set back their courses into the fourth year indicate that for the average medical school the last year offers the most satisfactory opportunity for demonstrating the important place of public health in modern medicine.

Name of Courses.—Table 2 shows a wide variation of names assigned to courses in public health and the year in which the course is given. It will be noted that the most common title is "Hygiene and Preventive Medicine" and the next most common title is "Hygiene."

TABLE 2

PUBLIC HEALTH COURSES GIVEN IN MEDICAL SCHOOLS CLASSIFIED BY NAME, NUMBER OF SCHOOLS AND YEAR GIVEN, 1922-23.

Name of course	Total	Number of schools Year given			
		2d	3d	4th	?
Hygiene	9	2	5	2	
Hygiene and Preventive Medicine	13	3	8	2*	
Hygiene and Sanitation	1	0	0	1	
Hygiene and Dietetics	1	0	1	0	
Hygiene and Epidemiology	1	0	1	0	
Preventive Medicine	4	1	1	2	
Preventive Medicine, Hygiene and Sanitation	1	0	0	1	
Public Health	5	1	1	3**	
Principles of Public Health	3	0	1	2**	
Public Health and Hygiene	1	0	0	1	
Public Health Administration	1	0	0	1	
Public Health and Preventive Medicine	1	0	1	0	
No special course	1	0	0	0	1
Total	42	7	19	15	1

*Course given last part of third year and first part of fourth year in University of California.
**Given in sixth year in Universities of Nebraska and Oregon.

Content of Course.—In considering the teaching of these courses rather recent articles from Dodson,[3] Sedgwick,[4] Haythorn,[5] Winslow,[6] Rankin[7] and others have all emphasized one point, namely, "the need for a radical change of atmosphere in the medical school itself." Obviously the attitude which the medical graduate carries with him into general practice will not be the attitude of his lecturer in a relatively brief course in hygiene, but an attitude acquired from his study of general medical subjects and from his association with those members

of the staff in charge of basic and clinical subjects. The relatively recent study of Jordan* showed that the important subject of public health has in general been sadly neglected in the general medical curriculum. We need, perhaps, stronger courses in hygiene and preventive medicine at some schools but it is not so important to increase the number of hours in this course as to place a larger emphasis on prevention in every department of the school.

In planning the course itself it seems essential that first consideration shall be given to equip the physician as a hygienic adviser to the family, competent to deal particularly with the environmental factors which affect health. The second emphasis of the course should deal with the organized community health program and the relation of the physician to the work of official health agencies and with such fields of activity as infant hygiene, anti-tuberculosis work, the medical supervision of school children and industrial hygiene. It is not considered feasible by the committee to prescribe a detailed course of study, but it is the opinion of the committee that the course should include a consideration of the following topics: the relationship of personal hygiene to medical practice, history and scope of the public health movement, sources and modes of infection, public health aspects of the communicable diseases (considered according to their natural grouping), isolation, quarantine and disinfection, disposal of sewage and other wastes, water supply, milk supply, food sanitation, epidemiology, ventilation, climatology, infant mortality, school hygiene, industrial hygiene, mental hygiene, diseases of adult life, public health administration, social aspects of medicine, vital statistics.

The use of the laboratory, demonstrations and field trips in presenting this material is of positive value. In some institutions a sanitary survey is required. These are usually made in the senior year through coöperation with state or city health departments. If facilities are such that these surveys are carefully made and properly supervised they are of definite benefit to communities and students alike.

Textbooks.—The committee does not feel that it should recommend special textbooks but lists the following books of recognized value arranged in alphabetical order according to the authors:

Bergey. "Hygiene." (Saunders.)
Boyd. "Practical Preventive Medicine." (Saunders.)
Fitzgerald. "Practice of Preventive Medicine." (Mosby.)
Park. "Public Health and Hygiene." (Lea and Febiger.)
Munson. "Hygiene of Communicable Diseases." (Hoeber.)
Rosenau. "Preventive Medicine and Hygiene." (Appleton's.)
Vaughan. "Epidemiology and Public Health." (Mosby.)

Summary.—In summarizing the results of its study the committee wishes to endorse the resolution passed by this association at its last annual meeting urging medical schools "to include in their curriculum a minimum of 72 hours for the study of public health and preventive medicine." It believes that in general the fourth year is the best place for such a course and that at least 50 per cent of the time should be used for demonstrations, laboratory work and field investigations. The course should be systematically arranged covering the topics mentioned above and using a standard work for a text or assigned reading.

PROFESSIONAL COURSES IN PUBLIC HEALTH

The committee presents herewith the data for the last academic year indicating the number of students taking courses leading to degrees in public health. Table 3 indicates the institutions offering such degrees, the number of candidates and the number of degrees granted. These data have been obtained by correspondence and we have tried to make them complete.

TABLE 3

NUMBER OF STUDENTS ENROLLED AND DEGREES CONFERRED IN COURSES REQUIRING AT LEAST ONE YEAR OF RESIDENCE AND LEADING TO A PUBLIC HEALTH CAREER.
1923

School	Degree	Number Enrolled 1923	Number Degrees Conferred 1923
University of California	A.B.	16	6
	M.A.	1	1
Yale University	Gr.P.H.	0	0
	Dr.P.H.	1	1
	C.P.H.	3	3
	M.S.	1	0
	Ph.D.	13	6
University of Louisville and State Dept. of Health	Dr.P.H.	0	0
University of Georgia announces courses leading to the B.S. in Public Health, M.S. in Public Health, and Dr.P.H., in which it is expected students will be admitted during the next academic year.			
Johns Hopkins School of Public Health	Dr.P.H.	23	12
	Sc.D. in H.	32	17
	C.P.H.	17	17
	Sc.B. in H.	6	0
Harvard School of Public Health	Dr.P.H.	9	1
	Dr. Med. Sciences	0	0
	Ph.D. in Hyg.	0	0
	M.P.H.	0	0
	B.P.H.	0	0
Mass. Institute of Technology	S.B. in P.H.	18	6
	C.P.H.	2	2
University of Michigan	M.S.P.H.	3	0
	Dr.P.H.	1	1
University of Minnesota Medical and Graduate Schools	M.S.	2	0
Detroit College of Medicine and Surgery	Dr.P.H.	1	1
University of New York and Bellevue Hospital Medical College	Dr.P.H.	5	2
	Dr.Sc.	1	1
	M.S.	2	2
Ohio State University	M.S.	1	1
	Cert. Ind. Med.	0	0
University of Pennsylvania School of Hygiene and Public Health	Dr.P.H.	3	0
McGill University	D.P.H. (Diploma)	2	2
University of Western Ontario	D.P.H. (Diploma)	3	2
L'University Laval	D.P.H. (Diploma)	5	5
Queens University	D.P.H. (Diploma)	0	0
University of Toronto	D.P.H. (Diploma)	6	3

Table 4 indicates the total number of the various public health degrees granted in the United States and Canada during 1923.

TABLE 4

THE NUMBER OF DEGREES IN PUBLIC HEALTH GRANTED IN 1923

Certificate in Public Health	22
Doctor of Public Health	18
Doctor of Science in Hygiene	18
Diploma in Public Health	12
Bachelor of Science in Public Health	6
Bachelor of Arts	6
Doctor of Philosophy	6
Master of Science	3
Master of Arts	1
Total	92

The number of degrees in public health granted in 1923 by the various institutions and reported above is as follows: Johns Hopkins, 46; Yale, 10; Massachusetts Institute of Technology, 8; California, 7; New York University and Bellevue Hospital, 5; Laval, 5; Toronto, 3; McGill, 2; Western Ontario, 2; Harvard, 1; Michigan, 1; Ohio, 1; Detroit College of Medicine and Surgery, 1; total, 92.

The following additional instruction and short courses were offered in public health in addition to courses leading to a public health degree as reported above. We have not included in either list courses of study in public health nursing or sanitary engineering.

University of California: Two weeks' institute for public health nurses is held in cooperation with the State Board of Health.

University of Georgia: Special instruction has been given to county health officers.

Harvard School of Public Health: Any course may be taken as a special course. Twenty-eight students not candidates for degrees took one or more special courses last year.

Johns Hopkins University, School of Hygiene and Public Health: Ninety-four students not candidates for degrees have taken one or more regular courses in the School. Special intensive course in Medical Zoology, eight students.

Laval University: Offers a diploma on the basis of four months in residence. (All other schools require one year.)

Louisville University and State Department of Health: One week health institute for nurses and health officers. Two hundred in attendance. A program of study was offered leading to a Certificate in Laboratory Technic. Thirteen students received such certificates. In a program of study leading to a Certificate in Sanitary Inspection five students completed the work.

Massachusetts Institute of Technology: Summer courses given in public health laboratory methods and bacteriology. Nine students enrolled. Special one-year program offered in health education, eight students.

McGill University: Short course for public health school inspectors. Five students.

University of Minnesota: Summer courses offered to teachers, forty enrolled. Summer courses offered to public health nurses, twenty enrolled.

New York University: One-year reading course for public health nurses, 150 students.

Ohio State Department of Health: Nine months' correspondence course, three months' field work. One hundred and twenty-five students registered. Twenty-four received certificates in acknowledgment of completing the course.

University of Pennsylvania: Special courses from time to time arranged for employees in the city health department.

University of Western Ontario: Special courses offered to health officers and others.

Rochester Board of Health: Short course for health officers, thirteen in attendance.

Yale University: Six special students not candidates for a degree have taken one or more public health courses.

It is obvious from a study of the above data that the courses already being offered in public health in various parts of the country could accommodate many times the number of students now enrolled. The need is not for more courses but for more students. It is important that we maintain thorough and adequate programs of study but it would seem to be even more important to require future appointees to public health positions to possess a definite knowledge of specific and fundamental public health subjects.

Indeed some professors of public health in replying to the inquiries of the committee have said that the reasons why more people do not take public health courses are, first, the limited number of full-time health officers employed, and secondly, the lack of a legal requirement demanding a knowledge of public health subjects on the part of health officials.

It seems desirable to the committee that two new activities should be undertaken during the coming year:

1. Some consideration might well be given to courses for the training of various specialists in the field of public health. Thus far we have considered only courses leading directly to the field of public health administration. Many of the universities which have supplied us the data we required have also submitted this additional data, which probably indicates that they would be glad to have it included. We, of course, recognize these specialties in the field of public health and it seems entirely appropriate that the committee should collect some data relative to the training of sanitary engineers, laboratorians, vital statisticians and perhaps also the training of public health nurses in case a Nursing Section of the association is definitely established.

(2) The committee might profitably

give further consideration, if facilities could be provided, to a study of minimum and fundamental essentials in the recognized Public Health degrees and assist in so far as it may be able in advising individual schools regarding the prevailing practice and the desirable minimum requirements.

C.-E. A. WINSLOW, *Chairman*
W. H. PARK
M. J. ROSENAU
W. H. WELCH
C. E. TURNER, *Secretary*

REFERENCES

1. It is expected that a paper by Professor Hiscock entitled "Public Health Courses in Medical Schools" will appear in the Journal of the American Medical Association.
2. Education Number, J. A. M. A., Vol. LXXIX, No. 8, 1922.
3. Dodson, John M. Preventive Medicine and the General Practitioner. J. A. M. A., Vol. LXXX, No. 1, Jan. 6, 1923.
4. Sedgwick, William T. Modern Medicine and the Public Health. P. H. Reports, Jan. 28, 1923.
5. Haythorn, Samuel R. The Problems of Preventive Medicine in Practice and in Medical Education. J. A. M. A., Vol. LXXX, No. 13, March 31, 1923.
6. Winslow, C.-E. A. A. J. P. H., Vol. XIII, No. 5, May, 1923.
7. Rankin, W. S. The Medical Profession and the Laity. A. J. P. H., May, 1923.
8. Jordan, E. O. Reasons Given by Medical Students for Not Entering Schools of Public Health. Public Health Bull. No. 126.

THE ENGINEER IN PUBLIC HEALTH WORK

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THE pioneer health board of America in the employment of engineers was the Massachusetts State Board of Health, which in 1876 engaged Kirkwood to make a report on river pollution and Philbrick on defects in house drainage and soon after other engineers to make investigations and reports on sundry environmental factors affecting the public health.

In 1880, the National Board of Health and the city of Philadelphia sent Rudolph Hering to Europe to investigate the sewerage of towns and his report thereon did much to call attention to the necessity and importance of the installation of properly designed sewers to promptly remove human excreta and other liquid filth from communities.

About 1886, Hiram Mills was made a member of the Massachusetts Board of Health and Frederick P. Stearns was appointed chief engineer.

In 1893, the first water filtration plant intended to purify water for the purpose of preventing disease was constructed at Lawrence, Massachusetts.

From these beginnings, the scope of activity of the engineer in public health work in America has expanded until it now includes: supply and purification of water; drainage, sewerage, treatment and disposal of sewage and industrial wastes; collection and disposal of garbage and refuse; control of pollution, utilization and conservation of streams and other natural waters; protection of purity of milk supplies; eradication and control of mosquitoes and other disease carrying vermin; abatement of public health nuisances; regulation of plumbing, heating, lighting and ventilation of buildings and many other sanitary matters.

This paper is a study of the present conditions in twelve states to show the relative magnitude of the engineering problems confronting the various state departments of health, how the responsibility has been met, the jurisdiction and personnel of the several engineering bureaus, and the compensation and qualifications of the engineers employed therein.

The data were obtained by correspondence with the following chief engineers of the several state departments of health and the author gives full credit for all data concerning the various state sanitary engineering bureaus to Gillespie of California, Ferguson of Illinois, Wolman of Maryland, Rich of Michigan, Whittaker of Minnesota, Croft of New

Jersey, Holmquist, Horton[1] and Suter[2] of New York State; Dittoe of Ohio, Messer of Virginia, and Tisdale of West Virginia.

The author assumes full responsibility for the assembling and conclusions drawn from the data, although it is believed that generally there is unanimity of opinion on the fundamental matters among the various chief engineers.

THE LOAD FACTORS

There is only to a slight degree an engineering problem in connection with public health work in the strictly rural districts. Sanitation on the farm is more a matter of protecting the family than the public, except on the dairy farm and then the public health should be safeguarded by the pasteurization of milk. The disposal of milky wastes in the rural districts involves sanitary engineering. In the summer time there is a responsibility in the rural districts resting upon the engineers in supervising the sanitation of camps, automobile tourists' sites, outdoor swimming pools, etc.

But the total population in the rural districts living on farms is not a measure of the magnitude of these responsibilities.

The sanitary engineering problems of the large cities are complex and generally difficult, but cities having over 100,000 population have, or surely ought to have, the services of competent skilled engineers and hence, the functions of the state engineers ought to be more in the nature of review of projects and plans and helpful coöperation with the municipal engineers in order to secure and subserve the general interests of the whole state.

In the municipalities having populations of less than 100,000, is found the major engineering work of a state health department.

The officials of the small towns often do not realize the importance of pure water and safe milk, of sewer systems, the treatment of sewage, etc. The municipal appropriations for such matters are generally inadequate and the local engineering advisors are often unskilled in the details of sanitation and sanitary engineering.

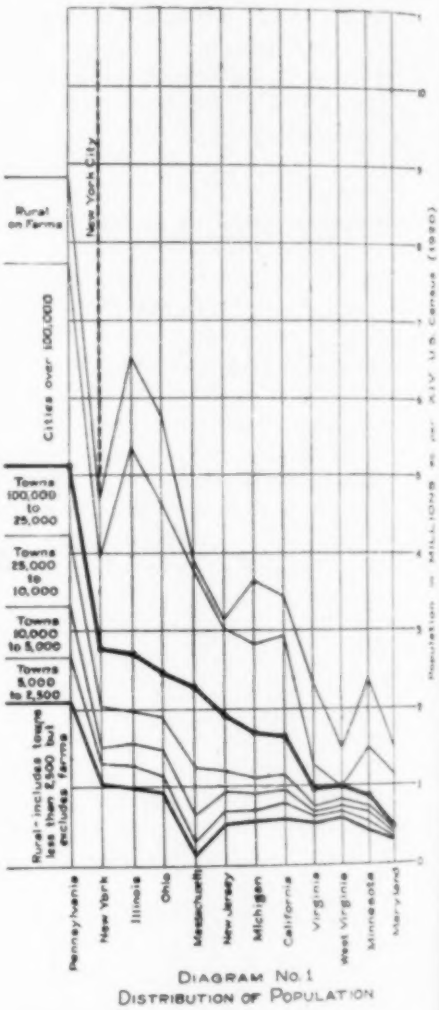

DIAGRAM NO. 1
DISTRIBUTION OF POPULATION

Hence the author postulates that the first measure of the load of engineering work confronting the sanitary engineers engaged in state health work is the aggregate population dwelling in communities of less than 100,000. To show this load the distribution of population, as

1. Chief Sanitary Engineer in the office of the State Engineer.
2. Engineer of the Conservation Commission acting as Deputy of Water Control Commission.

TABLE NO. 1.

JURISDICTION AND RELEVANT DATA

STATE	Waterworks		Total Number of Sewage Treatment works	Approve Plans and Supervise Operation of Works		Public Health Nuisances	Milk Control	Housing	Date Creation Eng'r Bureau
	Total Number	Population Served		Waterworks	Sewerage				
Pennsylvania	650	6,000,000	200	+	+	+	+	+	1905
New York	553	9,180,000	125	+[1]	+[1]	+[2]	+[7]	—	1906
Illinois	500	5,500,000	200	+	+	+[3]	—[7]	—	1915
Ohio	325	4,000,000	71	+	+	+[2]	—	—	1898
New Jersey	247	2,850,000	318	+	+	+[3]	—	—	1915
Michigan	305	2,520,000	34	+[3]	+[3]	+	—	—	1913
California	253	3,250,000	129	+	+	+[4]	—	—	1915
Virginia	199	850,000	9	+	—[6]	—	—	—	1910
West Virginia	171	475,000	3	+	+	—	—	—	1915
Minnesota	386	1,000,000	88	+[3]	+[3]	+[4]	+	—	1914
Maryland	101	960,000	20	+	+	+[3]	—	—	1912

[1] See text for subdivision authority.
[2] Through local authorities.
[3] Actually but not specifically.
[4] Limited to sewage and garbage
[5] Plans however submitted voluntarily
[6] Only so far as engineering is involved.
[7] Inaugurating milk work.

TABLE NO 2.

Salary per Year	Title	State	Minimum Requirements		
			College Graduate		Years Experience in Sanitary Engineering
			Yes	No	
$1800 to 2160	Tech. Asst.[1]	Pennsylvania	+		0
1920 to 2340	Asst. San. Engr.	Maryland	Equiv.		2[9]
2000 to 2400	Engr. Grade IV	Ohio	+		2
				—	5
2100 to 2500	Asst. San. Engr.	New York	+		2
2160 to 2640	Sen. Tech. Asst.[2]	Pennsylvania	+		2
2500 to 3000	Asst. San. Engr.	New York	+		5[4]
2640 to 3360	Technician[3]	Pennsylvania	+		3
1800 to 3600	Asst. San. Engr.	Illinois	+		[5]
2800 to 3200	Engr. Grade III	Ohio	+		4
				—	7
3000 to 3300	Sen. Asst. San. Engr.	Maryland	Equiv.		5[9]
3360 to 4800	Tech. Admin.[7]	Pennsylvania	+		5
3480	Chief Engineer	Maryland	Equiv.		12[9]
3600 to 4200	Engr. Grade II	Ohio	+		7
				—	11
4800 to 6000	Sen. Tech. Adm. [8]	Pennsylvania	+		8
5000 upward	Engr. Grade I [10]	Ohio	+		10[11]
				—	15[11]
6000 to 8000	Chf. Tech Adm. [10]	Pennsylvania	+		10

For Pennsylvania requirements see Table No. 3 [1]

Notes:

[1] Class includes engineering assistant.
[2] Also, knowledge of construction and operation water and sewerage systems; familiarity surveying and drafting; ability to prepare and interpret sanitary engineering plans, estimates and specifications; perform routine bacteriological examinations; tact and good engineering judgment; ability to manage men; initiative and accuracy.
[3] Class includes assistant engineer.
[4] Also, one year on construction of water or sewage treatment works.
[5] Also, practical experience in sanitary engineering phases public health work desirable in positions paying higher salaries. Tact and good judgment.
[6] Also, one year in responsible charge sanitary engineering work or equivalent; wide knowledge water supply, sewerage systems and sanitary engineering; knowledge sanitary conditions of State; ability to prepare and interpret sanitary engineering plans, estimates and reports; tact and good engineering judgment; supervisory ability and accuracy.
[7] Class includes San., Milk Control, Chem., Housing, Civil and Dist. Engr.
[8] Also, eight years supervisory or responsible position in sanitary engineering work; intimate knowledge water supply, sewerage, refuse disposal and sanitary engineering; expert ability to prepare and interpret sanitary engineering plans, estimates and specifications; ability to prepare technical reports, sanitary engineering topics; tact and sound engineering judgment and high degree administrative ability.
[9] Class includes Assistant Chief Engineer.
[10] Class includes Chief Engineer.
[11] At least two years of which shall have been in an executive capacity.

taken from the 1920 census, is given in Diagram 1 and the sequence of the twelve states erected therein is used hereafter in this paper. The heavy line showing aggregate population in towns of less than 100,000 is used on subsequent diagrams to convey the idea of the relative loads of engineering work on the various bureaus.

Attention is directed to the wide variation in distribution of population, *e.g.*, Massachusetts with almost the entire population dwelling in communities as one extreme, and the large proportion of small communities and rural population on farms in Pennsylvania, New York, Illinois, Ohio, Michigan, Virginia and Minnesota, as the other extreme.

Another measure of the responsibility of the engineers in state health work is the number of water works, the aggregate population served with public water, the number of sewage treatment plants and the scope of engineering jurisdiction. These data are set forth in Table 1, wherein the states are arranged in the same order as established in Diagram 1.

The actual and the rate of increase in the aggregate population dwelling in towns of from 2,500 to 100,000 is another measure of the magnitude of the engineering problem. These increases are not only due to growth of the larger towns but also include the growth of small towns to a size requiring installation of public water supplies and sewerage systems. These data are shown in Diagram 2.

The large increase in population during the last decade in Pennsylvania, Illinois, Michigan and California and the high percentage of growth in Michigan, California and West Virginia, are clearly indicative of the necessity of these states being prepared to meet the new problems confronting them in urban sanitation.

SCOPE OF ACTIVITIES

It is impossible within the limitations of this paper to give the jurisdiction of each of the engineering bureaus herein discussed and hence Pennsylvania and New York have been selected as representing those dealing with the largest aggregate population in towns under 100,000 and also to show an example of centralizing authority in one agency in Pennsylvania and an example of allocating various activities among separate organizations in New York State.

Minnesota was selected as representing a state having a relatively large percentage of population in rural districts.

The omission of the remaining states is regrettable and without prejudice.

The major activities of the Bureau of Engineering of the Pennsylvania Department of Health, include the following:

Waterworks. The examination of plans of new public waterworks projects or extensions or changes in existing waterworks, field and laboratory investigations thereof and recommending their approval, modification or rejection; supervision over the operation of public waterworks, so far as quality of the water is concerned; examination and certification to the United States Government as to quality of water used to fill drinking water tanks on railroad passenger trains and boats engaged in interstate traffic.

Sewerage. Examination of plans of all public and private sewerage projects, including treatment of sewage, field investigations and recommending the approval, modification or rejection of the plans; and supervision of the operation of sewage treatment works so far as proper operation and quality of effluent is concerned.

Milk. Administration of rules and regulations requiring medical examination of milk handlers and the pasteurization of all milk sold for human consumption, except that milk obtained from tuberculin tested herds may be sold as raw milk. Assisting local health authorities in the preparation and enforcement of local milk regulations.

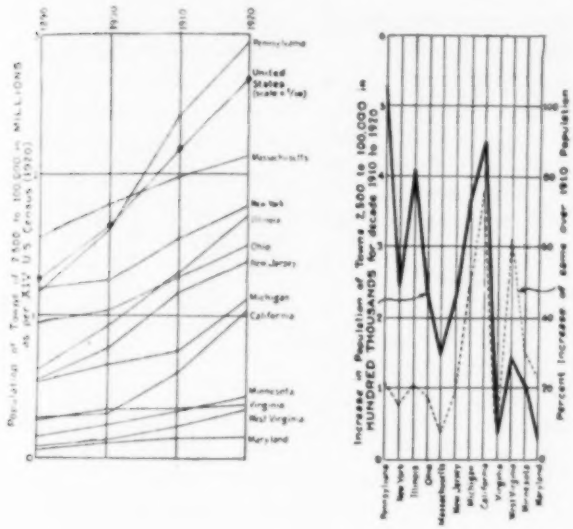

DIAGRAM NO. 2
INCREASE IN POPULATION

Nuisances. In the rural part of the state where there are no local boards of health: supervising inspection, service of abatement notices and assisting in prosecution of violation of law relative to public health nuisances.

Referring to local health authorities, complaints relative to public health nuisances in incorporated municipalities and assisting and coöperating when requested to secure abatement.

Housing. Administration of law relative to sanitation in boarding, lodging and tenement houses which requires adequate and pure water supply, proper sanitary means of excreta disposal, ample light and ventilation in sleeping and living rooms, general cleanliness of premises and provisions to prevent overcrowding.

Fairs. Inspection and supervision of water supply and disposal of excreta, manure and garbage at about 80 county fairs which are held in the autumn of each year.

Camps. Examining and advising on water supply, excreta disposal and general sanitation in summer camps for boys and girls.

Sanitation. Advising municipal officials on problems of general sanitation, such as water supply, installation of public sewers and sewage treatment works, garbage and refuse collection and disposal, etc., but always in a general way and with the recommendation that private engineering services be employed by the municipality to make detailed study and specific recommendations.

Typhoid Fever. Coöperating with medical officers of the Department of Health to determine the cause of epidemics of typhoid fever and other water or milk borne diseases and instituting engineering measures to eliminate the cause and prevent recurrence.

Stream Pollution. For the Sanitary Water Board: making sanitary surveys of streams to determine their condition, classification and policy, field inspection, laboratory investigations and recommending reasonable and practicable means for the abatement of sewage and industrial

waste pollutions including degree of treatment required to subserve the general interests of the public.

The sanitary engineering activities of the State of New York are conducted by several branches of the government, viz: The State Department of Health, the State Engineer, the Water Control Commission and the Conservation Commission as follows:

Water Supply. (1) The Engineer of the Conservation Commission, acting as deputy of the Water Control Commission makes examination of new waterworks projects and additions to existing ones, to the end that equitable apportionment of sources of supply may be attained, and to determine sufficiency and quality; holds hearings thereon and prepares report and permit for the Commission. The detail design and stability of the works are passed upon in the office of the State Engineer who is a member of the Commission and whose affirmative vote is required for the issuance of the permit.

(2) The Chief Sanitary Engineer of the office of the State Engineer examines plans of waterworks, examines all plans of waterworks for tuberculosis hospitals and prepares plans of waterworks for state institutions.

(3) The sanitary engineers of the State Department of Health inspect catchment areas used as sources of public water supply, prepare for enactment by the State Commissioner of Health rules and regulations for protection from contamination of public water supplies and cooperate with local health and water boards in the enforcement of such regulations; inspect the operation of waterworks and examine the quality of the supply and determine required improvements thereto and certify to the U. S. Treasury Department as to quality of water used in the interstate traffic.

Sewerage and Sewage and Industrial Waste Disposal. (1) The Chief Sanitary Engineer of the office of the State Engineer examines all plans for sewers, sewage and industrial waste treatment works, reports thereon and recommends to the State Commissioner of Health the conditions of permit to be issued by him in connection with the plans, and prepares sewerage plans for state institutions.

(2) The sanitary engineers of the Department of Health review the report of the State Engineer and prepare the permit, inspect the operation of such treatment works, determine quality of effluent and effect of its discharge upon the receiving body of water and determine the need of modification and improvement thereof.

Milk, Nuisances and General Sanitation. (1) The sanitary engineers of the Department of Health inspect milk pasteurization plants as to their sanitary condition, facilities for pasteurizing, bacteriologic standards and safeguards; inspect public health nuisances caused by sewage, industrial wastes, garbage, rendering plants and industries; cooperate with local health authorities in mosquito eradication; inspect the water supply, disposal of sewage and garbage at summer camps; inspect water supply, sewage disposal and milk supplies at state institutions; investigate to determine cause of water-borne disease outbreaks and adopt remedies and preventive measures; upon request give advice to municipalities on water supplies, sewerage, garbage, plumbing, ventilation, drainage, etc., and as directed by the Governor, make special sanitary engineering investigations and report.

(2) The Chief Sanitary Engineer of the office of the State Engineer, makes special and extensive sanitary investigations as directed or requested by the Legislature or the Governor.

Stream Pollution. The Engineer of the Conservation Commission (who also acts as the engineer to the Water Control Board) studies the degree of pollution of streams, means of control thereof and conducts investigations of diseases of fish and the artificial propagation of shell fish.

TABLE NO. 3.
QUALIFICATION REQUIREMENTS IN PENNSYLVANIA.

CLASS	College Education (Years)	Total Experience (Years)	Specialized Experience (Years) Included in Col. 2	Administrative or Expert Experience (Years) Included in Col. 2	Major Administrative Experience or Major Expert (Years) Included in Col. 4	Total Experience Equivalent of Columns 1 + 2 Qualification of Columns 3, 4 & 5 must be included	Beginning Salary Rate
T0 Technical Assistant	4	0	0	0	0	3	1500
T1 Senior Technical Assistant	4	2	2	0	0	6	2160
T4 Technician	4	3	2	0	0	8	2640
T3 Technical or Professional Administrator or Expert	4	5	2	1	0	Note 1	3360
T2 Senior Technical or Professional Administrator or Expert	4	8	4	2	0	Note 2	4500
T1 Chief Technical or Professional Administrator or Expert	4	10	6	5	2	Note 3	6000

NOTE—Applicable to Civil Engineers.
General—The grade of Mem. Am. Soc. C. E. shall be prima facie evidence, among other things, of compliance with the fundamental requirements of college training and total experience in classes T2 and T1 provided that the applicant has had 12 years' active practice in Engineering.
No. 1—At least 26 years of age; 8 years' active practice of Engineering, 2 years of which shall have been in responsible charge of Engineering work.
No. 2—At least 30 years of age; 10 years' active practice of Engineering, 5 years of which shall have been in responsible charge of Engineering work. Competence in design as well as in direction of Engineering work.
No. 3—At least 30 years of age; 12 years' active practice of Engineering, 5 years of which shall have been in responsible charge of Engineering work. Competence in design as well as in direction of Engineering work.

In Re New York City. (1) Under the Public Health Law, New York City is exempted from the provisions of the Sanitary Code. State engineers confer with the city officials relative to sewerage projects and the State Department of Health and the City of New York jointly enact rules for the protection of the watersheds from which the public water supply of the city is obtained. The engineers of the Department of Health determine the quality of the city's water supply for the purpose of certifying to the U. S. Treasury Department as to such water used in interstate traffic.

The major activities of the Division of Sanitation of the Minnesota State Board of Health include the investigation of proposed and existing water supplies, sewage and trade wastes, garbage and refuse disposal systems and plants.

In the case of proposed systems, a preliminary field investigation is made in cooperation with the local officials for the purpose of aiding them in the selection of a proper system. The regulations of the State Board of Health require that the plans and specifications for new systems be submitted and approved. When the system is completed, an investigation is made to determine that it has been installed in conformance with the approved plans. In the case of existing systems, field investigations are made to determine their sanitary condition, and if they are found to be unsatisfactory, specific recommendations are made for the correction of defects.

The supervision of certified milk, and the pasteurization of milk, and the handling of dairy products on premises where communicable diseases exist, is undertaken for the purpose of protecting the consumer against the diseases transmitted through milk, and deals strictly with the health aspect of the milk problem. Certified milk is produced in conformance with the regulations of the State Board of Health which requires careful veterinary examination of the cows, frequent sani-

tary inspections of the dairies, the medical examination of dairy workers, and the routine bacteriological, physical and chemical examinations of the milk.

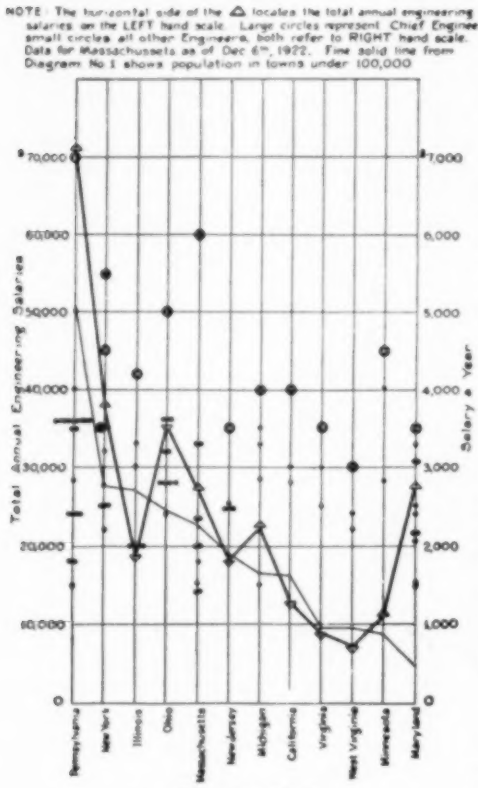

DIAGRAM NO. 3
SALARIES OF ENGINEERS

The regulations covering the pasteurization of milk define the process, require the approval of plans and specifications of new plants, require the examination of certain employees, and prohibit insanitary conditions at pasteurization plants. Investigations are made on existing pasteurization plants to determine that their equipment and methods of operation meet with the requirements of these regulations.

The supervision of the handling of dairy products from premises where communicable diseases exist is undertaken especially for the purpose of preventing hardships on the part of the owners of dairy farms where there are persons afflicted with diseases transmitted through milk. This supervision makes it possible for farm owners to dispose of dairy products that could not otherwise be used for human consumption without loss. This work requires careful field investigations in order to outline a procedure whereby dairy products may be disposed of without endangering public health, and to arrange for proper supervision by the local health authorities.

Assistance is given to municipalities and communities in the establishment of local supervision of sanitary problems. It is the general policy of the State Board of Health to encourage local government units to handle their own problems. The work undertaken by the State Board of Health usually includes a sanitary survey of the problem, followed by recommendations for correcting unsatisfactory conditions; advice on the passage of local ordinances; and assistance in putting the regulatory measures into effect. Model ordinances on milk supplies and other problems have been prepared for adoption by communities throughout the state.

Advice on rural sanitation is given for the protection of those living in the rural districts. Special investigations are made on problems of general concern and this information given to farmers and others through bulletins and correspondence. Bulletins have been prepared on such subjects as water supplies and sewerage systems for farm residences, the sanitary privy, etc.

Special investigations are undertaken on sanitary problems, the solution of which will be of value to the people of the state. This relates especially to the study of new processes, including water purification, milk pasteurization, sewage and dairy waste treatment, etc.

Special attention is given to educational work on public sanitation. Lectures and demonstrations are given on various phases of the subject. The courses in sanitation offered by the University of

Minnesota are given by the staff of the Division of Sanitation.

The work of the Divison of Sanitation is organized largely for the purpose of assisting local communities on problems which they are not equipped to solve for themselves.

THE ENGINEERING BUREAUS

The number of engineers in the several state health departments, their salaries and the total engineering annual payroll are shown on Diagram 3.

This shows a wide discrepancy in the size of the various engineering bureaus and in order to compare them in consideration of the load factor, the total annual payrolls of engineers of each state has been divided by the aggregate population (in millions) in the state, dwelling in towns of less than 100,000, exclusive of those on farms, and the ratio is shown by the heavy line on Diagram 4. These rates for Ohio, Pennsylvania, New York and Minnesota are nearly alike and average slightly below $14,000 per million.

It is therefore assumed that the minimum annual engineering salary payroll should be at least $14,000 per million of population living in communities of less than 100,000.

The diagram shows how the engineering bureaus in Illinois, Massachusetts, New Jersey, Michigan, California, Virginia and West Virginia do not have sufficient funds for salaries to equal this rate.

In the twelve states under consideration there are about one hundred engineers engaged in state health work. This small group may be considered as the police force or guards against the invasion of disease through water supplies, disposal of human excreta, etc., for the 24,000,000 people dwelling in places of less than 100,000. This service is now costing for salaries only one cent per capita per year and good work is being done largely due to the zeal of the engineers.

How much more work and greater service could be obtained and hence greater protection to the public health could be rendered if broader legal power were given, the number of engineers increased and adequate appropriations made!

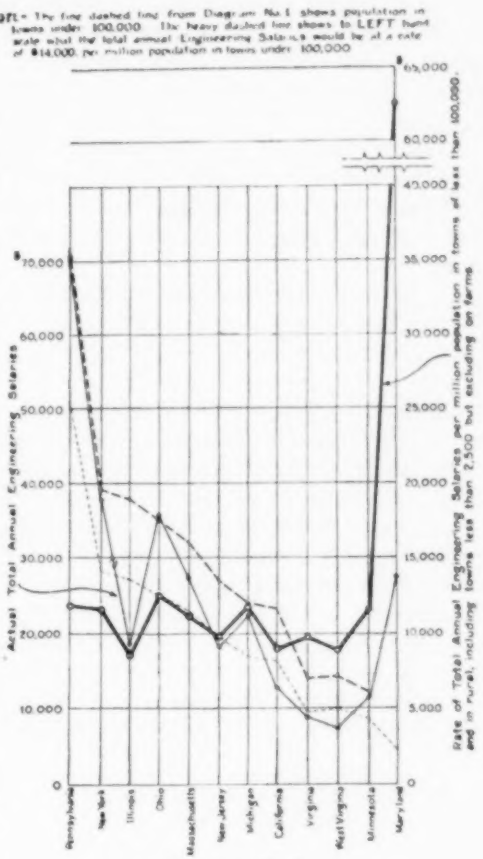

DIAGRAM No. 4
RATE OF ENGINEERING SALARIES

Suspicious water supplies could be made safe, pure public water could be introduced in towns to do away with the private wells so frequently a constant menace to health, the privy and the cesspool replaced by the sewer system, safer milk supplies furnished, better housing conditions provided and many other measures promoting public health and comfort could be inaugurated.

One of the most important services which the state sanitary engineers can render to the public if given proper authority and funds is the conservation of

the streams—one of the greatest resources of the country.

The residential and industrial development continually increases the demand for clean streams to provide water for domestic, recreational and industrial use and simultaneously the same development, unless pollution is kept under control, causes the destruction of the streams.

If heed be not given to sane engineering control of this pressing problem, the economic and aesthetic loss to the citizens of the United States will be appalling.

It is a problem capable of just and reasonable solution, but it requires brains and funds and time.

QUALIFICATION AND COMPENSATION

Considering the education, training and experience of the engineers in certain state departments of health, the actual conditions, either as to civil service or arbitrary requirements or where these are not in force the record of incumbents, are set forth in Tables 2 and 3.

These data show that collegiate education is practically the rule and long years of actual practice in sanitary engineering are required in the higher salaried positions.

The great difficulty is to induce young engineers to enter public health work because of the slow advance in salary. The result is that after a young engineer has been trained in the work and begins to become valuable to the state he is often able to obtain more lucrative employment in the office of the consulting engineer or corporation and so, because of limitations of appropriation, the various state sanitary engineering bureaus are, to a certain extent, postgraduate schools, to the advantage of the engineers in private practice.

And furthermore because of low compensation and slow advancement in state employment, the sanitary courses in the colleges are not attractive to young men, which increase the difficulties to secure trained young engineers in the lower salaried positions.

The ideal specifications for a sanitary engineer holding a responsible office in public health work should include: graduation as a civil engineer from a reputable college; practical experience in the design, construction and operation of waterworks, sewer systems and sewage treatment works; theoretic knowledge and practical experience in the sciences underlying sanitary engineering such as chemistry, biology, bacteriology, etc.; and familiarity with the principles and practice of preventive medicine, at least sufficient to work in harmony with physicians.

He must be self-reliant in the field when confronted with emergencies, for at times the health or even lives of thousands depend upon his decision to at once institute temporary measures to tide over the breakdown of a waterworks. Representing the state he should be more skilled than the local authorities, at least in the principles of sanitary science if not in local knowledge.

Personality is of equal importance with technical skill. The arbitrary enforcement of law should be a minor duty of the engineer in public health work. He should be a missionary, preaching the gospel of health, leading the way and helping officials and citizens to improve environment and to abate menaces to the public health.

To do this he must be an able speaker and clear writer, know individual and mass psychology and impress on the public the fact that he knows whereof he speaks and that what he proposes is practicable and will produce the required results.

CONCLUSIONS

Sanitary engineering is an essential and important function in public health work.

The number of engineers and aggregate salaries should be determined by the magnitude of the task.

Salaries of engineers should be commensurate with skill required and responsibilities imposed. Opportunity for promotion is necessary to retain the services of qualified engineers as their ability increases or they may find increased compensation elsewhere.

The qualifications which should be demanded, the duties that should be vested in, and the inherent responsibilities of the office of "Chief Engineer" of any state department of health justify a minimum salary of $4,000.

The minimum aggregate annual payroll of the engineers of a state department of health should be at least $14,000 per million inhabitants dwelling in towns of less than 100,000 population; and ample funds should be appropriated for salaries and expenses for collateral work such as in laboratories.

The rapid growth in population in the United States accentuates the need for more sanitary engineers in the public service and, in some cases, that they be vested by law with greater power to protect and promote the public health.

□

Quacks.—By a plea of guilty to the charges of conspiracy to defraud patients, the State's case against Dr. Wallace A. Reinhart, former head of the Milwaukee Health Institute, formerly conducted at 183 3rd St., Milwaukee, was brought to a close. The Court imposed a fine for Dr. Reinhart of $1,000 and costs, the sentence carrying with it automatic revocation of the license of Dr. Reinhart to practice either medicine or surgery in Wisconsin. Similar charges brought against Dr. Nathaniel Rogers, an associate of Dr. Reinhart, were held pending against the pledge of Dr. Rogers that he would leave the city and not practice here again.

This action, instituted by the Milwaukee Health Department, closes the doors of one of the most notorious of so-called health institutes, and it is devotedly to be hoped for all time. According to the story of witnesses, the title "Milwaukee Health Institute" misled quite a number of them to seek out the Institute in the belief that it was an official agency of the local Health Department.

It is to be hoped that the action taken by the district attorney's office and the courts, with regard to the doctor in question, may serve as a warning to others who may be engaged in a similar practice, though possibly less openly. There is nothing so contemptible as to defraud the sick, and it should be the special concern and vigilance of public officials to see to it that imposters of the caliber involved in the case in question will be promptly put out of business.—*Bulletin, Milwaukee Health Department.*

✚

Congenital Syphilis.—The Division of Venereal Disease of the United States Public Health Service has made a compilation of abstracts on the diagnosis of congenital syphilis. An abstract of practically every article on this subject that has appeared in recent American and foreign journals is included. This publication may be had free of charge upon application to the Surgeon General of the United States Public Health Service, Washington, D. C.

THE KAHN PRECIPITATION TEST FOR SYPHILIS

DEMONSTRATION

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THIS paper will discuss the author's precipitation test for syphilis as demonstrated before the Laboratory Section of the fifty-second annual meeting of the American Public Health Association at Boston on October 10, 1923. By courtesy of the editors of this JOURNAL, we are able to include some of the results of standardization studies carried out since the demonstration and fully discussed in another paper.[1] The following are included: (1) a simplified and standardized procedure for the preparation and titration of antigen, (2) some improvements in the details in carrying out the routine test, (3) a special quantitative procedure applicable particularly to the study of the serologic effect of antisyphilitic treatment, (4) a more standardized technic for the test with spinal fluids.

I. GLASSWARE AND APPARATUS REQUIRED FOR THE TEST *

All glassware employed in the test must be chemically clean and neutral.

1. *Test tubes:* Standard antigen dilution tubes are 5.5 cm. in length and 1.5 cm. in diameter.

Standard tubes for performing the test are 7.5 cm. in length and 1 cm. in diameter.

2. *Test tube racks:* Racks should be of such construction as to permit vigorous shaking of the tubes.

3. *Pipettes:* 10 c.c. pipettes marked in 0.1 c.c. quantities. 1 c.c. pipettes marked in 0.01 c.c. quantities. 0.2 c.c. pipettes marked in 0.001 c.c. quantities.

4. *Shaking machine:* May be of any construction which will hold the test tube racks employed.

5. *Inactivating bath* (56° C.) as well as centrifuge and centrifuge tubes may be of any make which will be found convenient in the particular laboratory.

II. REAGENTS EMPLOYED IN THE TEST

The three ingredients entering into the test are (1) Antigen, (2) Serum, and (3) Physiologic Salt Solution.

1. ANTIGEN †

Method of Preparation:

The method of antigen preparation has recently been standardized with a view of eliminating several of the variable elements inherent in the method previously used.

The unit amount of powdered beef heart used for preparing antigen is 25 gms. and it is always extracted in a 250 c.c. Erlenmeyer flask. The ether extraction consists of four ether "washings" of the powdered muscle at ten minute intervals with 100, 75, 75 and 75 c.c. ether, respectively. The subsequent alcohol extraction is carried out for three days at room temperature (21° C.). Twenty-five gms. of powdered beef heart will yield about 75 c.c. antigen. If the preparation of larger amounts is desired, as many 25 gm. quantities are employed as needed.

Powdered Heart Muscle.—About 400 gms. of heart muscle are cut out from at least three fresh beef hearts and passed four times through a meat grinder. The ground material is spread into a thin layer on a porcelain platter or glass plate and dried by means of one or two revolv-

* Glassware and apparatus for the test may be procured from the Chicago Glass Products Company, Chicago, Ill.

† The Michigan Department of Health furnishes antigen at a minimum cost.

ing fans. After six or eight hours, when the exposed surface is relatively dry, the material is turned over and drying continued over night. When the layer of beef heart is in the form of a dry plate, it is broken up into small pieces and drying continued until the material is brittle and easily breakable. The material is now ground into powder form by means of a mortar or coffee grinder which is used for no other purpose.

Powdered beef heart is now obtainable on the market from the Digestive Ferments Company, Detroit. It is prepared essentially as outlined above, except on a large scale—as many as seventy-five beef hearts entering into the preparation of a given lot. This assures a higher degree of uniformity than can be obtained with three beef hearts. Because of this uniformity element, the market product is used in this laboratory almost exclusively.

Extraction of Powdered Muscle with Ether.—Twenty-five gm. of powdered beef heart are placed in a 250 c.c. Erlenmeyer flask and 100 c.c. ether (anesthesia) added. The flask is shaken from time to time for an interval of ten minutes after which the ether is filtered off. The filtration process may be hastened somewhat by applying gentle pressure to the beef heart by means of a spatula. Filtration is completed when pressure with the spatula does not cause drops of ether to pass through the funnel.

The moist beef heart is now returned to the original 250 c.c. extraction flask. This may be done by first transferring the beef heart from the funnel to a sheet of white paper and breaking the material up with a spatula into pieces small enough for the mouth of the flask. Seventy-five c.c. ether are now added and the mixture again shaken for a ten-minute interval and filtered as above.

After the second filtration of ether, the beef heart is transferred to the flask for a third time and 75 c.c. ether again added. The mixture is shaken for a ten-minute interval and again filtered as described above.

The moist beef heart is now transferred for the fourth and last time to the flask and 75 c.c. ether added, the mixture shaken for ten minutes and filtered. After gentle pressure with a spatula does not cause drops of ether to pass through the funnel—the endpoint employed in each of the four ether filtrations—the beef heart is transferred to a sheet of white paper and dried either at room temperature or at 37° C. The drying usually requires from ten to fifteen minutes. When no ether odor is detectable, the beef heart is ready for extraction with alcohol. This extraction may be carried out in the same flask used for the ether extractions, provided the flask is entirely freed from ether odor.

Extraction of Powdered Muscle with Alcohol.—The ether extraction being completed, the dry powdered muscle is weighed and placed in a 250 c.c. flask. Usually there will be twenty-three gms. or less of the powder due to the loss during the ether extraction. Five c.c. of 95 per cent alcohol are added per gm. of powder. The flask is shaken for ten minutes and extraction allowed to continue at room temperature (21° C.) for three days without shaking. At the end of this period, the mixture is shaken for five minutes and filtered. The filtrate is kept in the dark at room temperature as stock antigen solution.

Cholesterinization of Alcoholic Extract.—A given amount of alcoholic extract—likely to be used in a month or two—is cholesterinized by adding 6 mg. of chemically pure cholesterin per c.c. of extract. The cholesterin is dissolved by rotating the flask in a water bath at 37° C. When all the cholesterin has been dissolved, the antigen is filtered to remove impurities and allowed to stand one day. It is then ready to be titrated or standardized for the test.

It is well to emphasize in connection with antigen preparation that the ether and alcohol employed should be of high purity and that the latter should be 95

per cent. At one time we unknowingly used 80 instead of 95 per cent alcohol with misleading results.

Tinfoil-covered corks have been found most satisfactory as stoppers for flasks used in antigen preparation and storing. Rubber as well as cork stoppers give off soluble elements into the alcohol which modify the final product.

Method of Antigen Titration:

The aim of the titration of antigen for this test is to find the minimum amount of physiologic salt solution to use with antigen which will result in an antigen-salt solution precipitate that is soluble on further addition of salt solution. The titration is carried out in the presence of salt solution and not in the presence of serum. solution and not in the presence of serum, although the latter may be used as a check on the titration, if desired.

One c.c. amounts of cholesterinized antigen are added to each of five standard antigen dilution tubes (5.5 cm. length and 1.5 cm. diameter). To five similar tubes are added the following amounts of physiologic salt solution, respectively: 0.8, 0.9, 1.0, 1.1 and 1.2 c.c. Each salt solution tube is emptied into a given anti gen tube and, without waiting to drain the salt solution, the mixture is immediately poured back and forth five or six times to permit thorough mixing. Each of the five antigen dilutions will show the presence of a definite precipitate. The character of these precipitates, however, will vary according to the quantity of salt solution used. Some of the precipitates will be found to be stable and will not dissolve when mixed with salt solution; other precipitates again will readily dissolve in salt solution.

The solubility in salt solution of each of the five antigen dilution precipitates is tested as follows: 0.05, 0.025 and 0.0125 c.c. amounts, respectively, of each antigen dilution are pipetted with a 0.2 c.c. pipette graduated in 0.001 c.c. into three tubes (7.5 cm. in length and 1 cm. diameter). These small quantities are pipetted in each case to the bottom of the tubes. 0.15 c.c. quantities of physiologic salt solution are now added to each tube. The rack is shaken vigorously for two minutes after which 0.5 c.c. salt solution is added to each tube and observation made as to whether or not the original antigen dilution precipitate has gone back into solution. The antigen dilution tube containing the smallest amount of salt solution in proportion to antigen, having a precipitate which goes back into solution in salt solution, as shown by this three tube test, represents the endpoint of this titration and determines the proportion in which antigen is to be mixed with salt solution in the performance of the tests.

The accompanying table gives an outline of a typical antigen titration.

TABLE 1.

TYPICAL ANTIGEN TITRATION FOR TEST WITH SERUM

Antigen Dilution Series	1	2	3	4	5
Antigen + Salt Solution c.c.	1 + .8	1 + .9	1 + 1.0	1 + 1.1	1 + 1.2
Result of Dilution	Heavy precipitate in each antigen dilution				
Scheme Used in Testing Solubility of Precipitate in Each Antigen Dilution	Tube No. 1 2 3 *Antigen Dilution c.c. .05 .025 .0125 Salt Solution c.c. .15 .15 .15 Tubes are shaken 2 minutes and 0.5 c.c. salt solution added to each. All are observed for precipitates.				
Solubility of Precipitate as Determined by Three-Tube Test	Precipitate Not Soluble	Precipitate Not Soluble	Precipitate Soluble	Precipitate Soluble	Precipitate Soluble
Standard Antigen Dilution			Antigen + minimum amount of salt solution giving precipitate which dissolves in salt solution		

*Each antigen dilution is allowed to stand 30 minutes after mixing antigen and salt solution before solubility test is made.

2. SERUM

The serums are separated from the clots by centrifugation in the usual manner, pipetted off and inactivated for 30 minutes at 56° C. The main point regarding serums is that they be free from red cells, fibrin and particles of any kind. No difficulty is encountered in this test with milky or chylous serums or with moderately hemolyzed specimens. Only such hemolyzed specimens which are not fit for a Wassermann test are not fit for a precipitation test.

3. PHYSIOLOGIC SALT SOLUTION

Salt solution is prepared by dissolving 8.5 gm. of chemically pure sodium chloride per liter of distilled water and filtering. Although sterility of this solution is not essential, the same type of chemical cleanliness usually employed in quantitative chemical work is required.

III. THE ROUTINE TEST WITH SERUM

The routine test consists of three tubes containing three different proportions of serum and antigen dilution in accordance with the following outline:

Tube No.	1	2	3
Serum: Antigen Dilution	3:1	6:1	12:1
Antigen Dilution c.c.	.05	.025	.0125
Serum c.c.	.15	.15	.15

Preparation of Standard Antigen Dilution.—It is well when carrying out a number of tests to inactivate the serums and set up and number the tubes before diluting antigen with salt solution for the tests. The antigen dilution is so standardized as to necessitate its use within a half hour after mixing antigen with salt solution. In this laboratory, with over 200 routine tests per day, enough antigen dilution for 60 or 80 tests is usually prepared at one time—two experienced workers pipetting antigen dilution and serum for about 80 tests in less than twenty minutes.

One c.c. antigen diluted with one c.c. salt solution gives sufficient antigen dilution for about 18 tests. Two or three c.c. antigen may be diluted with corresponding amounts of salt solution by utilizing the same standard antigen dilution tubes.

Procedure: One c.c. antigen is measured into an antigen dilution tube. An amount of salt solution usually approximating that of the antigen, according to the titre of the antigen, is measured into a similar tube. The salt solution is poured into the antigen and, without waiting to drain the tube, the mixture is immediately poured back and forth five or six times to insure thorough mixing. For uniformity, this antigen dilution is permitted to stand ten minutes at room temperature before pipetting.

As a preliminary control of the antigen dilution, 0.05 c.c. is measured into a test tube, 1 c.c. salt solution added and the tube shaken vigorously for ten or fifteen seconds. The mixture should appear opalescent.

Pipetting of Antigen Dilution.—The antigen dilution is always pipetted to the bottom of the tubes. The 0.05 c.c. amounts may be pipetted with a 1 c.c. pipette in which 0.05 c.c. graduations are indicated with a wax pencil. For the 0.025 and 0.0125 c.c. amounts of antigen dilution, 0.2 c.c. pipettes are employed and the proper markings may also be indicated with a wax pencil. The antigen dilution should be mixed frequently during the pipetting period to assure a uniform mixture. Due to the possibility of evaporation of the small amounts of antigen dilution used in the test, it is necessary to pipette the serum within several minutes after the antigen dilution has been pipetted. If a worker desires to run forty precipitation tests, for example, it is better to pipette antigen dilution and serums for ten tests at a time, than to pipette the antigen dilution for all the tests first and then follow with the serums.

Pipetting of Serum.—The 0.15 c.c. amounts of each serum are added to the antigen dilution by means of a 1 c.c. pipette graduated in 0.01 c.c. In pipetting these amounts of serum it is not necessary to lower the pipette to the bottom of

the tube. As soon as the serums have been added for ten tests, or less, the rack is shaken sufficiently to insure thorough mixing of the serum with antigen dilution.

Shaking of Tests.—After the serums have been mixed with the antigen dilution, the tests are shaken for a two minute interval. A shaking machine is of the utmost importance for this purpose, particularly in the examination of comparatively large numbers of specimens at a given time.

Effect of Incubation.—Although the final results may be read immediately after the shaking period, different workers have observed that a 15 minute incubation period in the water bath at 37° C. produces sufficient clumping of the precipitates to make the reading of the results easier, particularly in the case of weak reactions. In studying the effect of 15 minute incubation on this test, no tendency for false positive reactions has been observed, and on the basis of easier reading we consider the employment of this incubation period of some advantage.

Addition of Salt Solution and Reading of Results.—After the shaking of the tests as well as after the 15 minute incubation period, if employed, the serum-antigen mixtures appear uniformly cloudy. In order to render the negative reactions clear and thus simplify the reading of results, 0.5 c.c. salt solution is added to each tube. The tests should be read immediately after the addition of salt solution as an occasional weak precipitate may go back into solution on standing.

Readings are best made in front of a window with a darkened background. The negative serums appear opalescent and readily distinguishable without lifting the tubes from the racks. The strongly positive serums show heavy precipitates which are also easily read directly.

Only the tubes showing weak reactions need to be removed from the rack and examined individually. Each tube is lifted from the rack above the eye level, slanted to spread the fluid into a thin layer and examined for a precipitate.

In this laboratory, precipitation tests are read at night with the same ease as during the day. Light is furnished by a 300-watt daylight bulb in an overhead indirect fixture.

NOTE: If it is desired to make a check reading of the results at some later period, it is well to keep the tests at icebox temperature. Practically all positive reactions will be slightly stronger at the second reading. Occasionally, however, even at icebox temperature, a serum which gave a —, +, ++ at the first reading may be found to be negative during the second reading. We have observed these reversible precipitation reactions especially in early primary and in highly treated cases. The reading made immediately after the addition of 0.5 c.c. salt solution to each tube is the standard reading and is always the one reported.

The Control System.—1. Antigen Control. When pipetting antigen dilution for a series of tests, the last set-up of three regular antigen amounts receives 0.15 c.c. salt solution instead of serum and is read with the regular tests. All three tubes should show freedom from a precipitate.

2. Serum Controls. In the case of each positive reaction, the serum used in the test is examined for particles that might give the appearance of a specific precipitate.

3. Positive and Negative Controls. One or more such controls are included with each series of tests.

Interpretation of Results.—A definite precipitate suspended in a clear medium is considered a complete reaction and is read four plus. Proportionally weaker reactions are read three, two and one plus, respectively. The final result in each test is the average finding of the three tubes. Thus, if the precipitation reaction is four plus in each of the three tubes, the final result is four plus. If the reaction is —, +++, ++++, the final result is two plus. A number of typical reactions with this method and the final result in each case, are illustrated in Table 2.

TABLE 2.
INTERPRETATION OF RESULTS OF ROUTINE TEST WITH SERUM.

Tube No.		1	2	3	Average of Reaction in the Three Tubes = Final Result
Serum: Antigen Dilution Antigen Dilution c.c. Serum Undiluted c.c.		3:1 .05 .15	6:1 .025 .15	12:1 .0125 .15	
	Reaction No.				
Some Typical Reactions	1 2	++++ +++	++++ ++++	++++ ++++	++++
	3 4 5	++ + —	++++ ++++ ++++	++++ ++++ ++++	+++
	6 7 8	— — —	+++ ++ +	++++ ++++ ++++	++
	9 10 11	— — —	— — +	++++ +++ ++	+
	12	—	±	++	
	13 14	— —	— ±	++ +	±

Correlation of Results with Clinical Findings.—When the average result with this test is four plus, it will usually be found that we are dealing with untreated or little treated syphilis. When the result is less than four plus, the clinical condition is usually early primary or intensively treated syphilis. As a general rule, the average result corresponds with a cholesterinized antigen Wassermann except that the precipitation test is possibly more specific—due to the elimination of the hemolytic system.

In reporting the results with this test to physicians, it is well to give the actual precipitation findings in each of the three tubes as well as the final results. This gives the physician a more correct picture of the serologic condition of the patient than the average result alone.

Clinical studies carried out in conjunction with the Department of Dermatology and Syphilology of the University of Michigan Medical School indicate that this precipitation test is highly specific for syphilis. Tuberculosis, scarlet fever and other febrile diseases which occasionally give falsely positive reactions with the Wassermann test appear to give no such reactions with this method. Pregnancy also gives no false reactions. Yaws, yellow fever and pellagra, which give occasional false Wassermann reactions, are still to be studied with this method.

While strong reactions give every indication of being associated with syphilitic infection, weak reactions—particularly when the average finding is one plus—appear to have the same diagnostic significance as weak Wassermann reactions. Needless to say, as is true with any laboratory method, the finding with this test should be considered but one factor in the diagnostic syndrome in a given case.

IV. SPECIAL QUANTITATIVE TEST WITH SERUM

The routine test being quantitative in only a limited degree, a special quantitative procedure has been devised for the purpose of determining the relative potency of serums in terms of a unit system.

The Unit Reaction.—In the quantitative procedure, a constant amount of standard antigen dilution is employed with varying dilutions of serum. In the derivation of the unit reaction, 0.0125 c.c. antigen dilution and 0.15 c.c. undiluted

serum are the unit quantities employed. If complete precipitation is obtained when 0.0125 c.c. antigen dilution is used with 0.15 c.c. serum, only in undiluted form, the reaction represents four reacting units. If precipitation is complete with certain dilutions of serum, then the potency of the serum in terms of reacting units (S) is equal to four times the maximum dilution of the serum giving complete precipitation (D). The potency of any serum may be expressed by the formula

$$S = 4\ D$$

Thus, if 1:10 represents the highest dilution of serum capable of giving complete precipitation, the serum contains 4 x 10 or 40 reacting units. If 1:60 represents the highest dilution in which a serum gives a complete reaction, the serum contains 4 x 60 or 240 units. Similarly the potency of any serum may be determined.

In the quantitative procedure only complete precipitation reactions are considered in determining the concentration of reacting units in a given serum. The interpretation of intermediary reactions must be left to the judgment of individual workers. A reaction giving the appearance of a three plus might be included among complete reactions, while weaker reactions are considered negative. The results of the quantitative procedure, furthermore, are always expressed in units and not in plus signs. By thus adhering to the use of plus signs in connection with the routine test with serum and of units in connection with the special quantitative test, confusion of the results with the two procedures will be avoided.

Outline of Quantitative Test.—The quantitative procedure is applicable only to strongly positive serums, since only such serums are capable of giving precipitation reactions after dilution. A routine test, therefore, is always made before employing the quantitative test with a given serum.

Eight tubes are employed in this test, each tube containing 0.0125 c.c. standard antigen dilution with 0.15 c.c. quantities of serum dilutions ranging from 1:1 to 1:60.

The serum dilutions may be prepared as follows:

1:1 = undiluted serum
1:5 = 0.2 c.c. undiluted serum + 0.8 c.c. salt solution
1:10 = 0.6 c.c. 1:5 dilution + 0.6 c.c. salt solution
1:20 = 0.2 c.c. 1:10 dilution + 0.2 c.c. salt solution
1:30 = 0.2 c.c. 1:10 dilution + 0.4 c.c. salt solution
1:40 = 0.1 c.c. 1:10 dilution + 0.3 c.c. salt solution
1:50 = 0.1 c.c. 1:10 dilution + 0.4 c.c. salt solution
1:60 = 0.1 c.c. 1:10 dilution + 0.5 c.c. salt solution

NOTE: If it is desired to make more exact determinations of the number of reacting units in certain cases, serum dilutions in between those already indicated may be included. Serums of high potency, which give complete precipitation in a 1:60 dilution, may be diluted still further until a negative reaction is obtained.

The antigen dilution is prepared as for the routine test and pipetted in 0.0125 c.c. quantities to the bottom of the tubes in the usual manner. This is followed by 0.15 c.c. amounts of the various serum dilutions, in order, beginning with the undiluted serum. The rack is shaken for two minutes, 0.5 c.c. salt solution added to each tube, and the results read and recorded. If a fifteen minute inculation period at 37° C. is employed, it should be carried out as suggested in connection with the regular test, namely, after the shaking period and prior to the addition of salt solution.

Table 3 gives some typical reactions with the quantitative procedure.

Correlation of Quantitative Procedure with Routine Serum Test.—Since the last proportion of serum and antigen dilution of the routine test is the basis for determining the reacting unit, the results of the routine procedure can be readily interpreted in terms of reacting units. The three types of reactions in the routine

TABLE 3.

SOME TYPICAL REACTIONS WITH THE QUANTITATIVE PROCEDURE.

Serum: Salt Solution	1:1	1:5	1:10	1:20	1:30	1:40	1:50	1:60	Four times the maximum dilution of serum giving precipitation (4D)	Serum potency in terms of reacting units (S)
Serum Dilution c.c.	.15	.15	.15	.15	.15	.15	.15	.15		
Antigen Dilution c.c.	.0125	.0125	.0125	.0125	.0125	.0125	.0125	.0125		
Serum No.										
1	++++*	—	—	—	—	—	—	—	4 x 1	4
2	++++	++++	—	—	—	—	—	—	4 x 5	20
3	++++	++++	++++	—	—	—	—	—	4 x 10	40
4	++++	++++	++++	++++	—	—	—	—	4 x 20	80
5	++++	++++	++++	++++	++++	—	—	—	4 x 30	120
6	++++	++++	++++	++++	++++	++++	—	—	4 x 40	160
7	++++	++++	++++	++++	++++	++++	++++	—	4 x 50	200

*++++ = Complete precipitation reaction.

procedure of especial interest in this connection are:

Reaction No.	Standard Antigen Dilution c.c. .05 / Undiluted Serum c.c. .15	.025 / .15	.0125 / .15
1	—	—	++++
2	—	++++	++++
3	++++	++++	++++

The first reaction, in which the third tube only gives a four plus, represents four reacting units. The second, in which a four plus results from the use of double the amount of antigen dilution, indicates that the serum in a dilution of 1:2 would give complete precipitation with 0.0125 c.c. antigen dilution, thus representing approximately eight reacting units. On the same basis, the third reaction indicates that the serum would give complete precipitation in a dilution of 1:4 and therefore represents at least sixteen reacting units.

V. THE TEST WITH SPINAL FLUIDS

The test with spinal fluids requires preliminary concentration of the reacting substances in these fluids with a saturated solution of ammonium sulphate.* This in turn necessitates a special antigen titration. The test consists of one proportion of concentrated fluid and antigen dilution and is carried out in duplication.

Titration of Antigen for Spinal Fluid Test.—This titration differs from the antigen titration for the test with serum in that the solubility of the precipitates in the various antigen dilutions is tested with an ammonium sulphate solution approximating 10 per cent, instead of physiologic salt solution. This is necessary because the concentrated spinal fluid to be tested for specific reacting substances contains approximately 10 per cent ammonium sulphate.

Five 1 c.c. quantities of standard antigen are measured into five standard antigen dilution tubes. Into five similar tubes are measured 1.1, 1.2, 1.3, 1.4 and 1.5 c.c. physiologic salt solution, respectively. Each of the saline amounts is poured into an antigen tube and the mixture, in each case, immediately poured back and forth several times. These five antigen-saline dilutions contain precipitates and, after twenty minutes' standing, the solubility of these precipitates is tested with an ammonium sulphate solution prepared by mixing 1 c.c. of saturated solution with 9 c.c. normal saline. These tests are carried out in duplication employing 0.01 c.c. amounts of the five antigen dilutions with 0.15 c.c. quantities of the approximately 10 per cent ammonium sulphate solution. The proportion of ammonium sulphate solution to antigen dilution is 15:1. The antigen dilutions are pipetted to the bottom of the tubes with a 0.2 c.c. pipette graduated in 0.001 c.c. The ammonium sulphate solution is then added, the tubes shaken for two minutes and 0.2 c.c. saline

*Merck's Reagent Ammonium Sulphate has been found to give good results.

added to each tube to render easier the reading of the results. The dilution of antigen and saline which contains the smallest amount of saline in proportion to antigen, giving a precipitate which is soluble in ammonium sulphate solution represents the titre of the antigen for spinal fluids. A typical titration is given in Table 4.

TABLE 4.

TYPICAL ANTIGEN TITRATION FOR USE WITH SPINAL FLUID.

Antigen Dilution Series	1	2	3	4	5
Antigen + Salt Solution c.c.	1 + 1.1	1 + 1.2	1 + 1.3	1 + 1.4	1 + 1.5
Result of Dilution	Heavy precipitate in each antigen dilution				
Scheme Used in Testing Solubility of Precipitate in Each Antigen Dilution	Tube No. 1 2 *Antigen Dilution c.c. .01 .01 10% Sol. Ammonium Sulphate c.c. .15 .15 Tubes are shaken 2 minutes and 0.2 c.c. salt solution added to each. All are observed for precipitates.				
Solubility of Precipitate	Precipitate Not Soluble	Precipitate Not Soluble	Precipitate Not Soluble	Precipitate Soluble	Precipitate Soluble
Standard Antigen Dilution				Antigen + minimum amount of normal saline giving precipitate which dissolves in 10% ammonium sulphate sol.	

*Each antigen dilution is allowed to stand 20 minutes after mixing antigen and salt solution before solubility test is made.

Concentration of Fluid with Ammonium Sulphate.—Three c.c. of spinal fluid, previously rendered free from cellular material by centrifugation, are pipetted into a centrifuge tube and 2 c.c. of saturated solution ammonium sulphate added (Herrold). This is mixed, permitted to stand for one hour at room temperature and centrifuged at high speed for about fifteen minutes—a period usually sufficient to completely throw down the globulins. The supernatent fluid is poured off as completely as possible, the last drop adhering to the lip of the tube being taken up with filter paper. The globulin precipitate is found to be suspended in a small drop of ammonium sulphate solution. Three-tenths c.c. of salt solution (one-tenth of the original amount of spinal fluid used) is now added to the tube. This is added by lowering the pipette into the tube and running the saline down in the center so as to avoid washing down ammonium sulphate from the inner wall of the tube. The precipitate immediately dissolves and the resulting solution is tested with antigen dilution in a manner to be described.

Preparation of Antigen Dilution.—Antigen is diluted with salt solution as described under the test with serum, using the proportion indicated by the special titration method. The antigen dilution is allowed to stand for ten minutes before use in the test.

Pipetting of Antigen Dilution.—For each fluid to be tested, 0.01 c.c. of antigen dilution is pipetted to the bottom of each of two tubes, using a 0.2 c.c. pipette.

Pipetting of Concentrated Fluid.—Concentrated spinal fluid in 0.15 c.c. quantities is added to each of the tubes containing the antigen dilution.

Shaking of Tests.—After the concentrated fluids have been mixed with the antigen dilution, the tests are shaken for a two minute period.

Incubation.—The tests may be read immediately after the shaking period. As in the case of serums, however, a fifteen minute incubation period in the water bath may be employed, if desired.

Addition of Salt Solution and Reading of Results.—Immediately before reading the tests, 0.2 c.c. salt solution is added to each tube in order to render the negatives clear and reading easier.

The results are read as described under the test with serum.

The Control System.—The controls are of particular importance in the spinal fluid test in view of the fact that certain concentrations of ammonium sulphate are capable of giving precipitates with standard antigen dilution. The control of particular importance is carried out as follows: Three c.c. normal saline are added to a centrifuge tube and 2 c.c. of a saturated solution of ammonium sulphate thoroughly mixed with it. The tube is now emptied, in the same manner as the spinal fluid tube is emptied after centrifugation, and 0.3 c.c. salt solution added. We thus have here a concentration of ammonium sulphate approaching that in the concentrated globulin solution. A regular test performed with 0.15 c.c. of this control ammonium sulphate solution and 0.01 c.c. standard antigen dilution should show no precipitation.

An antigen dilution control, 0.01 c.c. mixed with 0.15 c.c. salt solution, is also included with the regular tests. Furthermore, every concentrated fluid to be tested is examined to establish total freedom from foreign particles. Finally, positive and negative spinal fluid controls should accompany each series of tests.

Interpretation of Results.—Reactions are read on the basis of four, three, two and one plus, respectively, depending upon the distinctness of the precipitates. Since the two tubes used for testing each fluid are duplicates, the reactions in the two should be identical.

VI. SUMMARY

1. *Routine Test with Serum.*—This test is quantitative to a limited degree—consisting of three tubes, each containing different proportions of serum and antigen dilution. The final result is the average of the precipitation findings in the three tubes, and is expressed in plus signs. The test is of value both in the diagnosis of syphilis and as a check on treatment. It may be used for this purpose independently of any other laboratory procedure provided (1) the workers performing it have had both training and experience in bacteriology and immunity and that (2) each test is performed in duplication.

2. *Special Quantitative Procedure.*—This procedure is highly quantitative in character, consisting of eight tubes, each containing a constant amount of antigen dilution with different dilutions of serum. The results with this procedure are always expressed in reacting units and are in this way distinguished from the results with the routine test which are expressed on a plus sign basis. This procedure enables one to determine the relative number of reacting substances in syphilitic serum and is of especial value when it is desired to study the quantitative effect of specific treatment on the number of these reacting substances.

3. *Test with Spinal Fluids.*—In this procedure, the globulins of the fluid are precipitated with ammonium sulphate and the precipitate subsequently dissolved in a minimum amount of salt solution—thereby concentrating the reacting substances of the fluid. This concentrated fluid is tested with antigen dilution in the usual manner. The test is essentially qualitative, its quantitative character being limited to the relative intensity of the precipitate formed in one proportion of concentrated fluid and antigen dilution. The results with this method appear to conform with the findings of a conservative Wassermann test.

ACKNOWLEDGMENT

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REFERENCE

1. Kahn, R. L. The Serology of Syphilis by Precipitation. (In press.)

THE KAHN PRECIPITATION TEST FOR SYPHILIS

TWO YEARS' EXPERIENCE IN A PUBLIC HEALTH LABORATORY

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Read before the Laboratory Section of the American Public Health Association at the Fifty-second Annual Meeting, Boston, Massachusetts, October 10, 1923.

A YEAR ago I discussed before this section the development of the Kahn precipitation test in the laboratories of the Michigan Department of Health and the value of this test as a check on the Wassermann.[1] Our results at that time were based on about 23,000 examinations and we concluded that this test, run parallel with the Wassermann test, gave a more correct laboratory diagnosis of syphilis than the Wassermann alone was capable of giving. We emphasized at that time the responsibility of public health laboratories in giving correct serum diagnosis of syphilis for the reason that such laboratories are usually removed from both the physician and patient and are therefore not able to check up the clinical status in each case, as is true in hospital laboratories. Finally, we suggested that other laboratories might undertake a study of this test. We felt confident that they, too, would find this simple test a valuable check on the Wassermann.

To what extent workers in different laboratories have since corroborated our findings is undoubtedly familiar to all of you. Keim and Wile,[2] who were the first to make a clinical study of this test, stated that, judged from clinical data, the Kahn precipitation test compared favorably in sensitiveness with the standard Wassermann reaction. Ide and Smith[3] found the test of sufficient value to inaugurate it as a routine check on the Wassermann in the Michigan State Psychopathic Hospital. Levin,[4] also, after a study of this test, is employing it as a check on the Wassermann in the State Board of Health Laboratory of Kansas. According to published reports, the Kahn precipitation test is employed as a routine procedure parallel with the Wassermann also at the Missouri State Board of Health (Dulaney[5]); the Duemling Clinic, Fort Wayne, Indiana (Grant[6]); the Wassermann laboratory of the Washington University, St. Louis (Holmes[7]); and the Toronto General Hospital (Detweiler[8]). Good results have also been obtained with this test by Anderson and Fisher,[9] Fox and Sanderson,[10] Elliott and Todd,[11] and by Babonneix, Boucher and Choay.[12]

The limitations of the procedure discussed last year have recently been summed up by Kahn[13] as follows: the necessity for overnight incubation of a large number of weaker positive reactions and the occasional loss of a positive reaction in cases of unquestionable syphilis. These limitations are now practically removed. The Kahn precipitation test is now completed within some minutes after mixing serum with antigen dilution. Furthermore, with the employment of three different quantitative relations between serum and antigen dilution to meet the antigen requirements of different syphilitic serums, the number of positive reactions likely to be lost is almost negligible.

Our records show a total of over 80,000 precipitation tests carried out in the laboratories of the Michigan Department of Health; 60,000 of these have been reported to Michigan physicians parallel with the Wassermann test, apparently to the satisfaction of these physicians; and over 35,000 of this number have been carried out with the new procedure. Based on experience gained with these examinations, we have sufficient

faith in the Kahn precipitation test to state that the principles underlying this procedure will be the next step toward a correct serum diagnosis of syphilis. The test, furthermore, by small changes in the technic, permits the quantitative determination of the relative number of syphilitic reacting substances in serum, based on a unit system. A special procedure with spinal fluid, evolved in this laboratory during the past year, also gives good results.

THE KAHN TEST IN THE MICHIGAN LABORATORIES

The following outline will present in a general way the routine procedure in handling about 200 specimens a day for the Wassermann and Kahn tests in the laboratories of the Michigan Department of Health. Approximately 150 of these specimens arrive in the morning mails and about 50 in the afternoon.

1. On a given day, Kahn tests are made with all specimens received in the forenoon and those received the previous afternoon. By 10:30 in the morning, about 120 of these specimens have been centrifuged and the serums pipetted off and inactivated for 20 minutes at 56° C. By 12:00 o'clock this number have been examined and recorded. The remaining specimens, about 80, are examined between 2:30 and 4:00 in the afternoon. This period, as well as the interval between 10:30 and 12:00 in the morning, is chosen for this test because our Wassermann work is so arranged that these intervals can most conveniently be spared.

2. All the serums examined by the Kahn test on a given day are reinactivated for 10 minutes the following morning and Wassermann examinations made in the usual manner. As soon as these tests are completed, the results are compared with the Kahn test findings recorded the previous day. Every specimen showing an important discrepancy is retested with both methods. Our records show that 0.7 per cent of the specimens show complete discrepancies in the results. Of these discrepancies, 3 per cent have been found to give opposite reactions on repetition, or approximately 1 in 4,000 specimens examined.

SUMMARY

The Kahn precipitation test, as at present carried out in the laboratories of the Michigan Department of Health, possesses the following features:

1. The method is comparatively simple and thus facilitates the study of many problems associated with the serum diagnosis of syphilis.

2. Reliable results are obtained with specimens which are anticomplementary in the Wassermann test, thus eliminating the necessity in many cases of obtaining new samples of blood and repeating the test.

3. The reaction being completed within a few minutes after mixing serum with antigen, the test is of especial help in emergency cases where the rapidity of obtaining results is an important factor.

4. The test appears to possess unusual specificity. It is well known, for example, that the Wassermann test may give falsely positive reactions in febrile conditions. Detweiler's[8] negative Kahn test findings at the Toronto General Hospital in a number of cases of nonsyphilitic pneumonia, against weakly positive Wassermann reactions, is in our opinion significant. Yagle and Kolmer's[14] finding also, that this precipitation test does not give false reactions in leprosy, should be mentioned in this connection.

5. The special quantitative procedure is of particular value in studying the serologic effect of antisyphilitic treatment.

6. The test with spinal fluids is an additional valuable precipitation procedure.

REFERENCES

1. Young, C. C. The Kahn Test for Syphilis in a Public Health Laboratory. AM. J. PUB. HEALTH, 13:96, 1923. See also Public Health Value of the Kahn Test for Syphilis: A Preliminary Report Based on Five Thousand Examinations. J. A. M. A., 79:1674, 1922.

2. Keim, H. L., and Wile, U. J. The Kahn Precipitation Test in the Diagnosis of Syphilis: A Preliminary Study. J. A. M. A., 79:870, 1922.

3. Ide, S., and Smith, G. J. Comparative Study of Wassermann and Kahn Tests for Syphilis. Arch. Dermat. and Syph., 6:770, 1922.

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THE RURAL HEALTH COMMISSIONER

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THIS dissertation is prepared by a student health officer, engaged in rural health work, and is written from practical experience, therefore it is hoped that others will criticize this paper in a manner that will be helpful to the writer, who, under no circumstances, attempts to qualify as an authority on the subject.

It appears to the writer that there is no phase of public health work which offers the health officer a greater future, or which requires better preliminary preparation or training than that of rural sanitation. It is also a foregone conclusion that no phase of public health work has made more rapid progress during the past few years. The rural morbidity and mortality statistics, when compared with that of the urban, indicates the necessity for a corresponding concentration of effort to control the rural health hazards.

It would seem that in preparing to enter the rural work, the health officer should have every qualification required of the modern municipal health commissioner plus the ability to make himself appreciated in the rural home. Should he eat beans with a knife, or be able to qualify as weather prophet, or an authority as to the kind of grain best adapted to a particular soil? This would be the extreme, but certainly the health officer who penetrates the inner confines of the rural household and who retains the respect and ability to educate these people, must at least make himself known by his conduct that he does not think himself better than the humblest farmer within his territory.

The health officer seems to make a good beginning who first makes a survey of his population as to their nationality, occupations, customs, habits and other general tangible health characteristics, and then from the summary endeavors to understand his people and in turn be understood by them.

The rural commissioner probably considers next in importance a survey of his territory as to health hazards from the sanitarian's point of view, which would include such engineering features as

(a) Topography, with special emphasis on hazards of polluted water supplies due to improper drainage, also the presence of lakes, ditches or basins of water which, when unstocked with surface minnows, or not oiled, offers excellent breeding places for malaria mosquitoes.

(b) Geology.—From the standpoint of unsuitable soil for the use of even the sanitary privies or as sources of well water. Even deep wells may become hazardous in a limestone area, due to fissures which allow the entrance of surface washings which may be conveyed directly into the water table of scores of wells. In certain sandy areas where the climate is suitable and uncinariasis has been present, there as an ever-present hazard of hook-worm infection.

The regular and systematic sanitary surveys should be made of all towns, villages, picnic or camp sites, and schools, with a view of locating the "rotten" spots on the "goodly apple" or health hazards and then definite educational efforts instituted to get them abated with as little friction as possible, which can be accomplished through education, again making use of tact or common sense.

All dairies, meat markets, slaughter houses, bakeries, cafés, hotels and soft drink stands should be regularly and systematically inspected, using score cards when possible, and after a liberal period of inspections, the scores should be published. Friendly competition in

(*Continued from page* 509)

4. Levin, W. The Kahn Precipitation Test for Syphilis. J. Kansas M. S., 23:4, 1923.
5. Dulaney, A. D. The Wassermann and Kahn Precipitation Tests Compared in Nine Hundred Cases. AM. J. PUB. HEALTH, 13:472, 1923.
6. Grant, M. S. Diagnostic Value of the Kahn Test for Syphilis. J. Lab. & Clin. Med., 8:468, 1923.
7. Holmes, Janet A. The Kahn Precipitation Test for Syphilis. J. A. M. A., 81:294, 1923.
8. Detweiler, H. K. The Value of the Kahn Precipitation Test for Syphilis. J. A. M. A., 81:815, 1923.
9. Anderson, J. F., and Fisher, E. E. A Comparison of the Wassermann and Kahn Tests in Three Hundred and Twenty-nine Cases. N. Y. Med. J., 118:490, 1923.
10. Fox, J. C., and Sanderson, E. S. Observation on the Kahn Precipitation Reaction for Syphilis. Am. J. Syph., 7:687, 1923.
11. Elliott, J. A., and Todd, L. C. The Value of the Kahn Precipitation Test in the Diagnosis of Primary Syphilis and Its Adaptation to Local Fluids. Arch. Dermat. and Syph., 9:208, 1924.
12. Babonneix, L., Boucher, R., and Choay, M. La reaction de Kahn et le diagnostic de la syphilis. Comp. rend. Soc. de biol., 88:683, 1923.
13. Kahn, R. L. Rapid Precipitation Phase of the Kahn Test for Syphilis. J. A. M. A., 81:88, 1923.
14. Yagle, E. M., and Kolmer, J. A. The Kahn Precipitation Reaction in Leprosy. Arch. Dermat. and Syphil., 8:183, 1923.

sanitation is productive of good and lasting results. Stables, alleys, privies, hog-pens, poultry houses and other places where possible health hazards exist, should also be inspected at least once each month during winter and oftener in summer.

The type of privy to be recommended in a rural community depends: first, on the pocketbook of the population, and, second, on the type of surface soil, and, third on the type of soil beneath the surface. The sanitary earth-pit privy, when fly-proofed and protected against rain-water washing into the pit, is the cheapest and most popular where there is suitable soil and plenty of it to accommodate each move when the old pit has been filled. This type is practically a duplicate of the army pit latrine privies. In the modern homes in town or the country, where the initial cost is not a factor and where the privy is to be stationary, the L.R.S. concrete compartment pit privy with subsurface overflow irrigation pipes, is probably the best.

As an educational feature, the lantern slides showing sanitary and unsanitary privies (obtainable from the United States Public Health Service) are highly recommended. Models of sanitary privies displayed in the health office are also useful. By individual visiting of representative farmers in each district, it is often possible to have them construct a "model" sanitary privy which neighbors may see and copy.

It is suggested that the rural health department conduct the following clinics: tuberculosis, prenatal, infant, preschool, teeth, throat, life extension, venereal disease, hook-worm, malaria and trachoma. The last three would, of course, apply only to the geographical areas involved. Prophylaxis against smallpox, diphtheria and typhoid fever should be offered as a regular routine, where indicated, in the office or in conjunction with the clinics held in the rural precincts. Curative clinics should be held after education of the professions in order that their coöperation or friendly tolerance may be had instead of the opposite. These clinics usually include venereal diseases, trachoma, malaria, hook-worm (dental and throat in remote rural districts, or where specialists are not available, or for the certified poor). In affecting cures in these diseases, we play a great rôle in the prevention of other cases.

No health department, however small, can give efficient service without immediate laboratory facilities and whenever possible the laboratory should be a part of the health office equipment.

It has been well said that *public health education* composes about 98 per cent of the effective work of a health department during its first few years at least. Before a customer will buy a piece of goods, or a tool, about which he knows nothing, he must be convinced that it is what he needs and much explaining or demonstrating has to be done to convince him. The same thing applies to the sale of *public health;* much depends upon the ability of the individual as a salesman. A personality which easily takes with the masses is a most fortunate qualification. He should be a good "mixer" and a person who can think on his feet. Public speaking is, therefore, a useful tool to the health officer. Among his profession and in the county medical association he usually reaps great benefits. Social, civic, fraternal, legal, commercial, educational or other organizations, circles, clubs or gatherings of the people among whom his activities are conducted should be *sold* on all matters pertaining to the work. In politics he can profit by being noncommittal and by acting the part of an interested spectator in all political gatherings.

The attendance of the health officer at farm clubs and picnics is essential if he is to sell the farmer. Rural church gatherings also offer opportunities to sell health activities through the minister or some member of the body who has been previously *sold*. Rural health committees composed of the most active supporters of the work should be appointed in every district to coöperate and advise with the health officer concerning community or district problems of any nature pertaining to health. Contagious diseases, never seen by physicians, are reported by such committees. The committees are also good sales-agents for the work in their respective communities.

The health officer should have his little booth or tent at all county fairs, public picnics or other public gatherings in the county whenever possible, where he has an excellent opportunity to hold clinics, give first aid or otherwise sell health work in detail along all lines by individual contact and talks and by distributing health literature.

Next to direct contact in farm clubs and in the homes, the best means of educating the fathers and mothers would most likely be through the children, who will in turn educate

the parents. The county daily or weekly papers as well as farm journals are very essential as media through which much of our best health education is accomplished.

A health education campaign conducted for a month each year by enthusiastic public speakers who have been thoroughly sold to the work has accomplished much toward making the work permanent.

A full-page insert, setting forth the progress of the work during the past year, is good advertising and will reach a majority of the rural people if all county papers use the inserted sheet. Can the rural health officer win without the combined support of the press?

A public health school, like any other school, is essential in the course of training of leaders and when the health official has received his diploma, he has only finished his preparation to commence another education which consists chiefly in the application of his professional theories into actual practice. This education he must work out for himself and in doing so he feels keenly the need of advice from those who have successfully fought the battles under difficulties in pioneer fields.

It is through the leading health journals and official reports from different states and municipalities, that the health officer, in his search for suggestions pertaining to his problems, finds assistance.

The rural health official looks forward to the time when a journal of Rural Sanitation will be available. In such a journal, rural problems would be discussed in detail, and it is believed that while they resemble or duplicate those of a municipality or state in many ways, still they are sufficiently different, from the specialists' standpoint, as to warrant an entirely separate classification as well as journalistic advantages. Very often budgets do not enable the rural health officer to print progress reports which might be sent out through mailing lists. We therefore do not often know what the other rural units are doing.

The United States Public Health Service and Rockefeller Foundation came to the rescue of the rural population whose morbidity and mortality rates during recent years have exceeded those of the urban population, and much has been done to organize, financially support and otherwise promote the full-time county health units in a majority of states. The states or counties must, of course, duplicate or match the finances furnished by these agencies, and, jointly, all agencies provide the funds which enable the rural health officer and his assistants to prove, by actual results, that rural people need the work sufficiently so that they should finance it entirely themselves.

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AMERICAN CHILD HEALTH ASSOCIATION DEMONSTRATION

Some city or county in one of eleven far western states is to be awarded the fourth in the series of five-year child health demonstrations conducted by the Child Health Demonstration Committee, associated with the American Child Health Asociation for the supervision of the Commonwealth Fund Program.

The city or county must be between 20,000 and 75,000 population and be located in one of the following states: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington or Wyoming.

Any city or county in these states with a population between 20,000 and 75,000 will be eligible for consideration. The selection of the center will be based upon a careful review of the whole health situation and the needs of the community. But the paramount consideration in making the choice will be the sincerity of the community's desire to develop a complete and rounded child health plan for the community as a whole.

MINERAL ELEMENTS IN NUTRITION WITH SPECIAL REFERENCE TO CALCIUM AND PHOSPHORUS

This statement, which was presented at the third session of the Food and Drugs Section of the American Public Health Association at Boston, was prepared at the request of the Section by its Committee on Nutritional Problems. Professor H. C. Sherman of Columbia University, New York, acted as Chairman of this Committee.

AS IN the study of the protein and vitamin requirements, so also in the case of the mineral elements, our knowledge has in recent years been advanced by the two independent but mutually supplementary methods of fully controlled laboratory experiments and of observations upon human experience under ordinary conditions of life.

A few years ago it was strikingly shown by Osborne and Mendel that healthy growing animals (rats) can adapt themselves to shortage of chlorine, sodium, potassium or magnesium to a surprising degree, but that calcium and phosphorus are always needed in relatively liberal amounts. Let us then give first attention to calcium and phosphorus.

For the past twelve or fifteen years it has been recognized, at least by those who have given sufficient attention to the matter (the attention of many has doubtless been diverted by the important advances in our knowledge of the proteins and of the vitamins which have been made during the same period) that the adequacy of the calcium intake is often a problem of very real importance in human nutrition, and that phosphorus may sometimes present a similar problem. These elements therefore demand the careful study not only of those who devote themselves to the chemistry of food and nutrition as such, but to those as well who are interested in nutrition primarily as a factor in the public health.

The various forms and products of the grains and other seeds which constitute so large a part of the food intake of man in the temperate regions are all very poor in calcium. So are all fats, all meats, and nearly all sweets. McCollum's experiments with a wide range of food mixtures show how frequently growth is retarded by shortage of calcium unless milk or leaf vegetables make a prominent part of the dietary. The phosphorus intake is much less frequently inadequate because lean meats and whole grains contain fairly liberal proportions of phosphorus. Of the phosphorus of the grain, however, three-fourths or more is lost in the ordinary processes of milling to make white flour, white rice, or degerminated corn meal, so that when these foods enter largely into the dietary, and fat meats replace lean meats to a large extent, or if the calories are drawn too largely from fats and sugar, the dietary may become unduly poor in phosphorus.

Hence it became important to know the quantities of calcium and phosphorus actually needed in normal human nutrition.

Calcium and Phosphorus Requirements of Man.—Considerable research has therefore been devoted to the careful quantitative determination of the amounts of calcium and phosphorus needed for normal maintenance in healthy men and women. In fact we now know the calcium requirement and the phosphorus requirement with essentially the same degree of definiteness and accuracy with which the protein requirement is known.

For each of these three nutritive requirements (protein, phosphorus, and calcium) we have now on record just about 100 satisfactory experiments in which the balance of intake and output of nitrogen, phosphorus and calcium respectively have been determined under such dietary and other conditions as to justify deductions regarding the amounts

required for the maintenance of normal equilibrium. Statements often met to the effect that the quantities of mineral elements really required in nutrition are but vaguely known, are no longer true as regards calcium and phosphorus.

The data of our present knowledge of normal maintenance requirements of protein, phosphorus, and calcium in adult human nutrition have been summarized as follows:

		Average per 70 kgms.
Protein		
Requirement	109 Expts.	44.4±0.6 gms.
Phosphorus		
Requirement	95 Expts.	0.88±0.01 gms.
Calcium		
Requirement	97 Expts.	0.45±0.008 gms.

In each case the probable error of the average amounts to less than 2 per cent of its value, making it quite improbable that any of these averages will be materially changed by the accumulation of more data.

We must conclude, then, that our knowledge is about equally accurate as regards the protein, the phosphorus, and the calcium requirements and that individual variability plays about an equal part in the three cases. How far the variations revealed by individual metabolism experiments are due to true physiological differences among the people studied and how far to differences in the experimental diets used and other environmental factors, are questions still awaiting solution, no less in the case of the protein than in that of the phosphorus and the calcium requirement.

Several recent contributions bear more or less directly upon the problem of the influence of other dietary factors or experimental conditions upon the calcium or phosphorus balance in the body. Those of Dr. Bogert and her co-workers at the Kansas Agricultural College may here be mentioned.

Bogert and McKittrick find that the addition of a relatively large amount of magnesium citrate to the diet increases the output of both magnesium and calcium.

Bogert and Kirkpatrick tried the effect of a change in the balance of acid-forming to base-forming elements in the food upon the calcium balance. A change to base-forming diet caused in each of four cases a diminished output of calcium in the urine, while the change to acid-forming diet caused an increase of urinary calcium in three of the four cases. These (like some but not all previous experiments) show the tendency of the base-forming diets to divert calcium from the urine to the feces, and of acid-forming diets to increase the urinary output of calcium. "Three of the four subjects showed a noticeable increase in total calcium excretion and two showed increased negative calcium balances, not to be accounted for by calcium deficiency in the diets, during the period in which the acid-forming diets were consumed." "The total calcium excretion during the period of the base-forming diet was lower than in the preceding period in three subjects and about the same in the fourth." "In two instances the negative calcium balance was diminished on the base-forming diet while in two instances it was increased." . . . Finally the authors conclude: "Since the calcium intake furnished by the base-forming diet was appreciably lower than that furnished by either of the other diets, it is impossible to draw definite conclusions as to the influence of the acid-base content of the diets upon calcium retention. However, the facts stated above tend to indicate that calcium is retained somewhat more readily on a basic diet than on balanced or acid-forming diets, while calcium excretion is greater on an acid-forming diet than on balanced or base-forming diets."

This conclusion is rendered the more probable both by earlier work upon adults and by the still more recent work of Shohl upon infants.

By determining the total intake and output of all acid-forming and base-forming mineral elements, Shohl finds that the normal growth of an infant involves

the daily storage of a very considerable surplus of base-forming elements (equivalent to about 6 to 10 c.c. of normal alkali per day). Much the greater part of this is retained in the form of calcium and goes for the building of bone. The retention was increased on administration of alkali and diminished on administration of mineral acid.

In continuation of the above mentioned work of Bogert and associates, Bogert and Trail tried the influence of yeast and of butter-fat upon calcium, magnesium, and phosphorus assimilation. Four normal young women were studied during sixteen consecutive experimental days divided into four periods of four days each. The diet of the first and third periods was selected so as to be low in vitamins. In the second period yeast was added and in the fourth period butter-fat was substituted for the fat of nut margarine. Although the calcium intake of the first and third periods was sufficient to meet average requirements, the body lost calcium. The addition of yeast to the vitamin-poor food led to lowered excretion of calcium in three of the four cases. Enrichment of the diet in vitamin A resulted in an improved calcium balance in all four cases. The magnesium and phosphorus balances were improved during the yeast period in two out of three cases, and during the butter period in all of four cases.

In conclusion these authors add: "Although the above facts strongly suggest some relationship between the vitamin content of the diet and the assimilation of calcium, magnesium and phosphorus, the effects produced by the yeast and butter-fat may be due to factors other than their vitamin content." No definite suggestion as to the nature of other possible factors is, however, offered.

It is evident that much remains to be done to work out the detailed conditions which may influence the calcium balance; but the methods for such work are now well defined and the orientation of future efforts in this direction should be greatly helped by our present knowledge of the vitamin values of foods and especially by the fact that the average calcium requirement for the maintenance of equilibrium in normal men and women is now well established.

The calcium requirement is a little over one-hundredth of the protein requirement, and the need for a margin over actual requirement as a "factor of safety" would seem to be at least as great in the case of calcium as of protein. Hence whatever the factor of safety adopted or margin allowed for individual variations, it would follow that a food supply, in order to furnish these essential nutrients in relative proportions corresponding to the needs of the body should contain at least one-hundredth as much calcium as protein. This is not usually the case in American dietaries, from the study of which it appears that most Americans carry a much larger insurance as regards protein than as regards calcium.

This is clearly shown by a study of the data of over 200 American dietaries, each representing the unbiased food consumption of a family or larger group for a period of a week or more. About one-half of these studies were made under the auspices of the United States Department of Agriculture and about one-half by the New York Association for Improving the Condition of the Poor. In order that the results might be as broadly representative as possible, the observations were extended over both rural and urban families in various parts of the United States, over a number of years, and over families representing a wide range of income and level of expenditure for food.

It appears from these data that both city and country dietaries in the United States are more often deficient in calcium than in any other chemical element so far investigated. The *average* of these dietaries shows a margin above actual need of about 140 per cent in the case of protein, about 80 per cent in the case of

phosphorus, and about 60 per cent in the case of calcium. But in such studies the average tells us only the lesser part of what we wish to know. The high intakes of some families raise the average but do not confer any benefit upon the families whose intake is low. In this case the most important question is the frequency with which dietary deficiencies occur. Taking the requirements of normal maintenance as the basis of comparison, it appears that among the dietaries here considered about 1 per cent were deficient in amount of protein, about 4 per cent in amount of phosphorus and about 16 per cent were deficient in the amount of calcium which they contained. Some of the deficiencies are plainly due, at least in part, to the consumption of an insufficient amount of food. If the data of all such dietaries be increased in such ratio as to make their total food value equal to 3,000 calories per man per day, none of the dietaries would then be deficient in the amount of protein which they contain, only about 1 per cent would be deficient in phosphorus, but about 9 per cent would still be deficient in their calcium content.

Thus the careful statistical study of over two hundred dietaries representing the ordinary food habits of the people of the United States leads to the same view as that so frequently emphasized by McCollum in discussing the results of his laboratory experiments with rats, namely, that American dietaries tend to be too poor in calcium, and that for this as well as for other reasons, more prominence should be given, in American food supplies, to milk in its various forms and to the leaf vegetables.

The Requirements of Children.—In view of the fact that most physicians who have given careful attention to the subject recommend a quart of milk per day for every child, while some believe that a pint per day may do as well, the New York Association for Improving the Condition of the Poor undertook, with the coöperation of the Department of Chemistry of Columbia University, an extended series of carefully controlled experiments upon normal children of various ages to determine, first, what amount of milk in the daily diet would provide for the optimum storage of calcium and phosphorus in the body of the growing child, and therefore, presumably, for the best development of bones and teeth, and, second, to what extent the needed calcium can be obtained from vegetables as well as from milk. The results of these experiments lead to the conclusion that throughout the entire time of rapid growth, that is up to at least the age of thirteen years, the child should receive in some form the equivalent of a full quart of milk per day in order to provide for an optimum storage of calcium as well as of phosphorus. Equally good results could not be secured in any of the many experiments in which one-half of this milk was replaced by vegetables furnishing an equal amount of calcium. A liberal allowance of vegetables in the dietary is desirable for other reasons, but does not diminish the importance of "a quart of milk per day for every child."

While these results are discussed largely in terms of the calcium balance it is certain that the benefit of the liberal allowance of milk is not due to its calcium alone, but to its well-balanced proportions of calcium, phosphorus, and other growth essentials.

What happens when the intake of calcium is below the requirement? Usually growth is retarded. Sometimes growth in size occurs while the normal development of the bone is interfered with.

McCollum noticed that in his rats whose growth was retarded by diets consisting too largely of seeds, there was a tendency for the skeleton to lose its long, lithe form and become more or less abnormally stocky with frequent gross appearances suggestive of rickets.

Sherman and Pappenheimer found that experimental rickets in rats could be produced or prevented at will by a simple

change in the mineral content of the diet, all other conditions being exactly the same. This observation was quickly confirmed and extended by McCollum, Shipley, and Park and their associates in Baltimore, and by Hess, Pappenheimer and Zucker and their collaborators in New York.

The results obtained by these two groups of investigators are for the most part in good agreement. Both recognize two types of rickets which may be designated as low-phosphorus and low-calcium rickets respectively. Both recognize rickets as essentially a perversion of the mineral metabolism; and that there is no substance holding the same relation to rickets that the antineuritic vitamin holds to beriberi and the antiscorbutic vitamin to scurvy. However, the rickets which would otherwise result, or which has resulted, from the abnormal proportions of phosphorus and calcium presented to the developing bone (for this does not always depend upon abnormal proportions in the food) may be prevented, or cured, by sunlight or by codliver oil. The good effect of the codliver oil in preventing or curing rickets is doubtless due to its containing a more or less specific antirachitic substance; but it is plain that the case here is quite different from that of beriberi or scurvy and that rickets must be regarded as primarily characterized by a failure of normal adjustment in the intake or in the metabolism of calcium or phosphorus or both. Direct sunlight (ultraviolet rays) and the antirachitic substance of codliver oil, egg yolk, etc., undoubtedly help the body to cope with this defect of the mineral metabolism, but the discussion of these important factors lies outside the scope of the present report.

Many of the recent reports and discussions would seem to imply that the majority of the cases of clinical rickets are of the low-phosphorus type, whereas the studies of dietary data have shown as above noted that American family dietaries are more often deficient in calcium than in phosphorus. This may be explained in one or more of three ways. Rickets is a disease of young children whose diet may be quite different from that of the families to which they belong. Clinical rickets may be due to disturbance of mineral metabolism through some perversion of body processes and not merely to a faulty mineral content of the food. Or low-calcium rickets may be much more common than has recently been assumed, failure to recognize its frequency being due to the fact that it is commonly complicated and obscured by tetany. The recognized association of calcium dedeficiency and tetany, combined with the observation of Huldschinsky, recently confirmed by Casparis and Kramer that ultraviolet ray treatment, such as cures rickets, is effective also in tetany, not only dispelling the symptoms but simultaneously raising the calcium content of the serum to normal—these facts suggest strongly that the infantile tetany of the clinic either largely constitutes or largely covers the analogue in human experience of the low-calcium rickets of the laboratory.

Hence the recent evidence of clinical research, of laboratory experimentation, and of statistical studies of the food supply all point strongly to the great practical importance of calcium and phosphorus as factors in nutrition and health.

Two other of the so-called inorganic elements, namely, iron and iodine, also appear to be of direct practical importance from the public health standpoint in the sense that freely chosen American dietaries do not always furnish a sufficient intake of these elements. The limit of length for the present communication having already been reached, your Committee suggests that the consideration of iron and iodine be left for a subsequent report.

Respectfully submitted,

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THE PROBLEM OF TRAINING

A little over two years ago the Surgeon General of the United States Public Health Service called together in Washington a distinguished group of men and women to discuss the Future of Public Health and the Education of Sanitarians. This conference emphasized what many administrators had already learned by experience, that the problem of getting well-trained workers for public health jobs was one of the most pressing in our whole public health scheme. The problem is not alone one of securing general practitioners of public health, but one of securing specialists as well.

Elsewhere in this JOURNAL, is presented a symposium on Public Health Training. This, taken with Dr. Nicoll's article in the April number, gives a comprehensive statement of the major issues involved. A foreword to the symposium, by the present chairman of the Committee on Public Health Training, well sums up the activities of this Committee to date. In reading these articles, and considering the question of training, it is important to bear in mind that public health work is even yet in a relatively early stage of development. Plans for education must, therefore, provide not only for the supplementary training of individuals now partially equipped, but also for the future, when we expect that many more than do now will begin when they enter college to direct studies definitely toward becoming sanitarians.

The summer schools and institutes in public health, which the Public Health Service has been so active in promoting, are doing splendid service in giving supplementary training to those already professionally engaged; but for the future needs it is encouraging to witness the growing number of schools of public health which are training men and women specifically for their new profession.

Academically, public health has a place in education peculiarly its own, with

an individual curriculum composed of certain special phases of all other sciences and many arts.* A responsibility rests with us who have learned largely through practical experience to provide the facilities for those who will follow in our footsteps, in order that they may secure the proper training, which was not available when we were preparing ourselves (in most cases unknowingly) as public health workers.

MALTA FEVER IN THE UNITED STATES AND ITS RELATION TO COW'S MILK

The first case of Malta fever ever recognized in the United States is believed to have been that of a physician in Philadelphia, who took part in the Porto Rican campaign of the Spanish American war. Some time after this the disease was brought to the United States in a shipment of goats, but as far as human beings went the disease was confined to the crew of the Joshua Nicholson, the vessel which brought them over. Later the disease became endemic in the Pecos Valley of Texas, due to goat ranges. Still more recently a number of outbreaks have been noted in our southwestern states.[1]

The discovery of the Bacillus abortus by Bang excited a great deal of interest and many prolonged studies of its influence on cattle have been made in this country as well as others. In 1911 Schroeder and Cotton reported the presence of this organism in aproximately 10 per cent of the samples of market milk collected by them. This observation has been extended and confirmed by numerous observers.

More recently it has been demonstrated that the Bacillus abortus of Bang and the Micrococcus meletensis of Bruce are closely related strains, belonging to the same species. A recent paper [2] gives a review of the literature and a report on recent work done in the Hygienic Laboratory, Washington, D. C.

Of 500 human sera 59, or 11.8 per cent, showed positive agglutination with the Malta fever organism of human origin in dilutions of 1 to 5 or higher. These sera were obtained at the Naval Hospital, Washington, D. C., and at a number of places in the northeastern part of the United States, mainly from veterans' hospitals. The conclusion is drawn that the raw milk of cattle, possibly throughout the United States, may serve as a source of Malta fever in human beings. This conclusion is strengthened by the results obtained from one patient who could not trace any possible infection from goats, but who had been in the habit of drinking raw cow's milk. Absorption tests showed that this man was infected with the abortus or bovine variety of the Micrococcus meletensis. His serum had a titer of 1:320.

The other positive sera varied in their titer from 1:5 to 1:40. The suggested explanation for these reactions is that the agglutinins demonstrated in these sera had been produced as a specific response to infection with the Micrococcus meletensis ingested in cow's milk, though the production of noticeable illness was not evident at that time.

These results may clear up some of the obscure cases which are seen from time to time. While recognizing the validity of the conclusion we do not believe that production of Malta fever through the ingestion of the Bacillus abortus will produce widespread outbreaks. The facts, however, serve as another argument in favor of the pasteurization of milk for human consumption.

* Should We Have Faculties of Public Health? H. W. Hill, *Science*, February 15, 1924, p. 153 et seq.

1. Public Health Reports, Vol. 37, No. 47, November 24, 1922.
2. Public Health Reports, Vol. 39, No. 11, March 14, 1924.

THE RATHBONE AND COPELAND BILLS

Several hearings have been held on these bills, the first, H. R. 5845, and the second, Senate Bill 2218, which are identical. The chief spokesman in favor of this legislation was Mr. Norman Hapgood, editor of Hearst's International, whose arguments were supported by Mr. DeKruif, whose articles on the medical profession have attracted attention during the last two years, and whose writings concerning certain vaccine manufacturers have led to a suit against the Hearst interests for more than $1,000,000. Mr. Hapgood's arguments were, as might have been expected, exaggerated and extreme.

The chief biological manufacturers were present or represented. The Public Health Service was represented by Dr. McCoy, Director of the Hygienic Laboratory. The Army and Navy also had representatives present.

The result of the early hearings was that a new measure was introduced as H. R. 7366, which superseded the original bill. The final result has been the withdrawal of the two bills mentioned, and the substitution on April 11, 1924, of H. R. 8618, the substance of which is here given:

"Sec. 2. That no person shall fasely label or mark any package or container of any virus, serum, toxin, antitoxin, or product aforesaid, nor alter any label or mark on any package or container of any virus, serum, toxin, antitoxin, or product aforesaid, so as to falsify such label or mark; nor shall any person advertise, distribute, or sell any such virus, serum, toxin, antitoxin, vaccine or product aforesaid under any false or misleading representation as to its nature, origin, composition, physiologic reaction, or therapeutic effect."

The attitude of the most reputable manufacturers at the hearing was that the matter should be decided by the medical profession. There seems to be no objection to the third bill which Congressman Rathbone has introduced. The writer has discussed it with a leading manufacturer of biologicals, and no objections were raised. Though no reports of hearings have so far been received, there does not seem to be anything that an honest manufacturer can object to in the final bill as presented.

The Public Health Service, which is charged with the administration of the law concerning the production of biologicals has up to the present time been in an unfortunate position in some respects. In the matter of vaccines, for example, it has been able to speak concerning their safety only as regards contamination. It has been impossible for the Service to determine the exact composition of these vaccines, and this is especially true of those which contain a number of different organisms,—some as many as seven. There is no method known by which an accurate count of the various organisms constituting a mixed vaccine can be made. Further than this the Service has no authority to debar any preparation, however extravagant might be the claims made for it in ordinary advertising. We believe thoroughly in the right of educated physicians to use what they see fit, and to try out new preparations, but certain manufacturers literally bombard the medical profession with misleading advertisements and preposterous claims. As the average physician is not a trained bacteriologist, and is too busy to keep up with new laboratory procedures, much harm is done by such advertising, and too many physicians take their therapeutics from the advertisements of manufacturers instead of from text books, or from reputable journals, which, being published weekly or monthly, can give to the profession information concerning new discoveries just as soon as manufacturers can. We recommend the spirit of our manufacturers in keeping up with medical progress, and in making available to the profession new products as they are brought out. We believe that advertisements should be con-

servative and cautious. This is already true for the best manufacturers,[a] but unfortunately there are others whose chief object seems to be to sell their products, regardless of whether or not their value has been proven.[1]

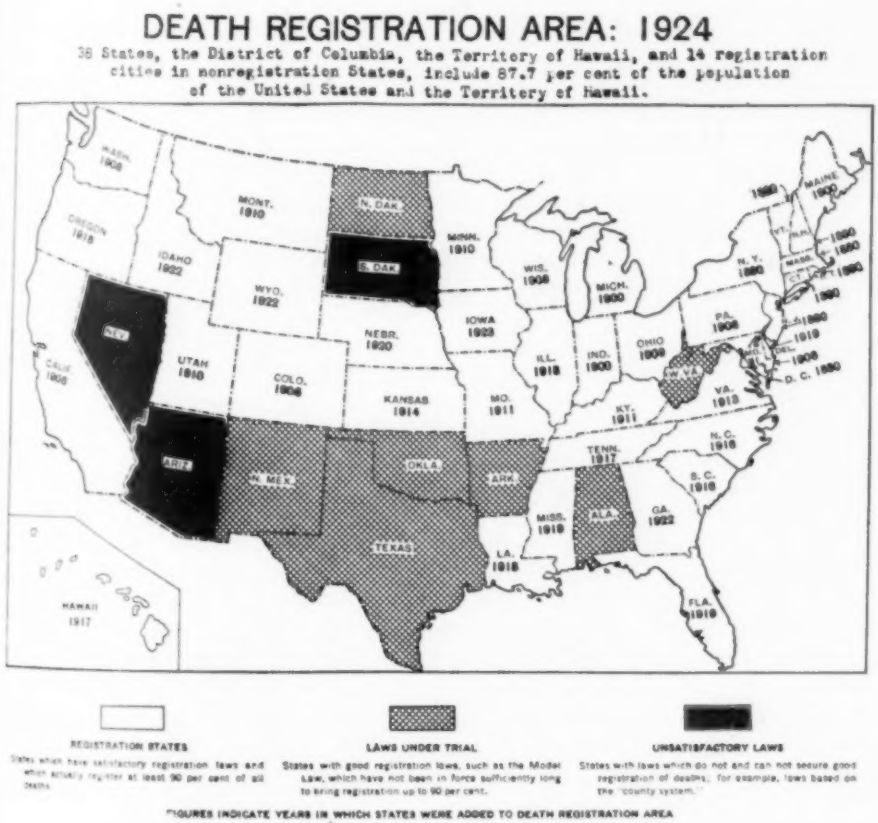
[1] Since the above was written a hearing has been held on H. R. 8618. After a somewhat stormy session it was decided by the committee not to report this bill out, and the Chairman announced the subject was "dead." More recent information is that an attempt will be made to revive the whole matter. The final outcome will be noted in these columns.

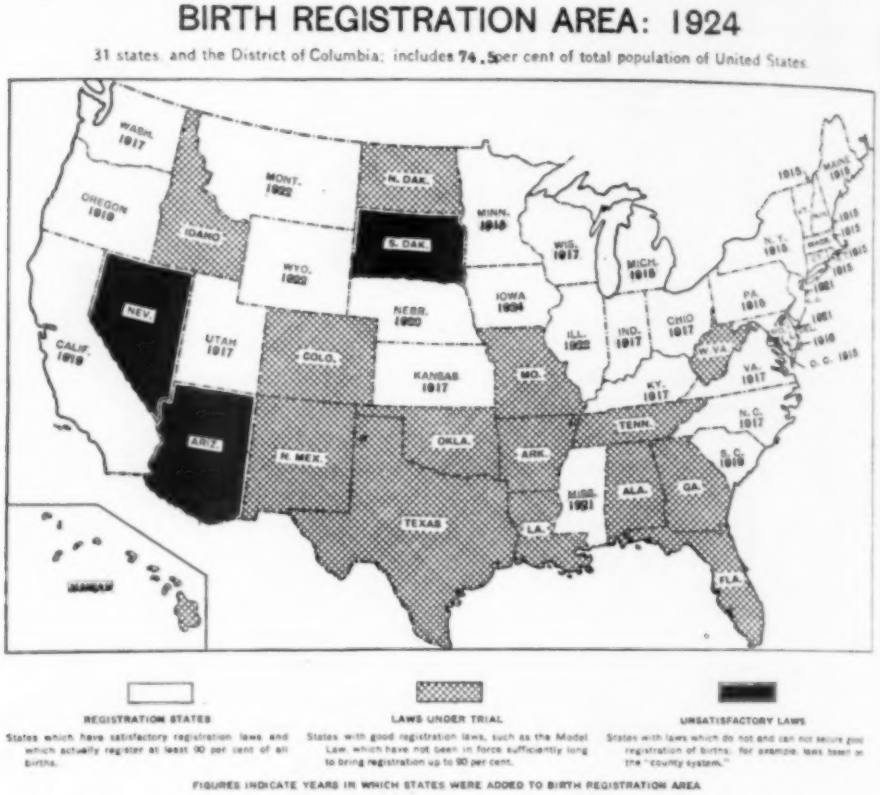
EVERY STATE IN THE REGISTRATION AREA BEFORE 1930

To-day there are 38 states in the Death Registration Area and 31 states in the Birth Registration Area. The goal is to bring every state in the Union into these registration areas before 1930.

There are two main reasons for fixing 1930 as the year for complete registration areas:

(1) The six-year interval for hard work should be long enough to accomplish the task, for in the last six years 11 states have been admitted to the Death Registration Area, and a like number to the Birth Registration Area.





(2) The enumerated population of 1930 will afford a reliable base for rates, which, with all states in the areas, will be the first authentic birth and death rates ever compiled for the entire nation.

The accompanying maps clearly show the task ahead. Coöperation from all is solicited to make this nation of ours a more civilized one, with official records of births and deaths from every state.

ALCOHOL AND MAN

The action of alcohol on the human body has been the subject of discussion for many years. If one reads the material put out by certain propagandist societies and by the prohibitionists one might believe that the effects of alcohol are entirely bad. Recently a thoughtful and enlightening book on alcohol has been published by Starling,[1] the well known physiologist of University College, London. It is the work of a scientist and bears the imprint of accurate study and observation, with moderate conclusions therefrom, regardless of their effect for or against prevailing opinions and regulatory laws. The food properties of alcohol are considered, also its action on behavior, fatigue, digestion, circulation, respiration

1. The Action of Alcohol in Man. Ernest H. Starling. Longmans, Green & Company.

and temperature, as well as its effect on the community. There is no attempt to discredit any of the well known facts concerning the action of alcohol. The author agrees with Professor Atwater that a certain amount of alcohol can be utilized as food, but considers that its value in this respect for the normal individual has no importance. It is always injurious in its effect when taken in large quantities, and especially when its excessive use extends over long periods of time. The plentiful use of alcoholic drinks is not beneficial for heavy workers, and while a trained man may do good physical work under the influence of a moderate amount of alcohol, its action is deleterious, slowing his pace and increasing the amount of energy he has to put forth for a given amount of work. Comparisons between gangs of men doing heavy work, one using alcohol and one not, are always in favor of the abstinent gang, the work being better done and with less fatigue. Industrial drinking is founded on a pernicious delusion.

As a food its value should be confined to cases of diabetes where it can be oxidized in place of sugar which the patient is unable to oxidize. In the weakness of old age and in some cases of disease it also has a good effect, and is of special use in allaying restlessness and producing sleep.

Its action on the central nervous system is marked and significant, but it always has a paralyzing effect on the highest and last developed functions of the cerebral cortex, on which it is always and essentially depressant. Through this action the brakes of normality are released and various effects usually considered stimulant, such as greater freedom of movement and speech and quickening of the pulse, are brought about.

The relaxing of tension through the narcotic action of alcohol on the highest brain centers may be of value in bringing on relaxation after toil, and in dulling the sense of care and worry, thereby improving the digestion and assimilation of food, and bringing about the restoration of the normal condition by quiet sleep. The author says: . . . "the abolition of all alcoholic beverages from among our midst, even if carried out by universal consent, would be a mistake and contrary to the permanent interests of the race. If it were enforced by legislation against the wishes and convictions of a large proportion of the members of the community, I believe it would be little short of a calamity."

The book ends with a statistical review by Professor Raymond Pearl entitled, "Alcohol and Mortality," in which figures of actuaries and statisticians, such as have been published by the life insurance companies in recent years, are subjected to critical analysis. Like Starling, Professor Pearl leaves no doubt that the excessive use of alcohol is injurious, diminishing the mean duration of life and increasing the rate of mortality, but shows that what is ordinarily understood as the moderate use of alcohol does not sensibly shorten the mean duration of life, as compared to that enjoyed by total abstainers, and does not increase the mortality rate. This conclusion is a statistical one, true in the aggregate, but may or may not be true for any particular individual. The responsibility for any deductions which may be drawn from these conclusions as to practical conduct are placed on the reader.

The book is particularly interesting in the light of an extensive piece of experimental work by Stockard.[2] This study has extended over a period of thirteen years, and includes more than 5,000 animals, which have been exposed to the systematic use of alcohol for periods varying from a few months to six years. In the early generations, whether normal sires were mated with alcoholic mothers,

2. Alcohol a Factor in Elimination of Racial Degeneracy. Charles R. Stockard, Ph.D. American Journal of Medical Sciences, April, 1924.

or normal mothers were mated with alcoholic sires, the results were disastrous to the young, proving incontestably the injurious action of alcohol on the germ-cells. Though the normal stock used for control in these experiments was of the highest quality, after some generations the animals treated with alcohol made a better showing than the normal. The alcohol treatments eliminated more young than would have died normally, and this took place especially in the early stages of development. Among normal control stock there are embryos which die, but there are some weak specimens in all such stock which do not die in early life. The weaker embryos are eliminated from the alcoholic stock, and a higher proportion of resistant individuals survive. In other words, alcohol is selective in its action and eliminates the weaker embryos, with the result that each generation becomes more and more free from these weaker embryos, and a better progeny results. The fourth generation of animals from alcoholic great-great-grandparents have a mortality of only 13.2 per cent against 21 per cent for the controls, or 64 against the normal 100. "All of the weak and altered germ-cells have now been eliminated from the lines, and a group of superior animals are obtained, which average well above the control."

How may these results be applied to man? There seems to be no question that our preventive measures, humanitarian though they may be, have negatived the selective action of infant mortality, and have balked much that is good in in evolution. Wild animals attain a great degree of perfection by elimination of the weak, and the survival of the fittest. Among wild races of man cripples and defectives are often discarded by the tribe. Up to the present time food has been abundant for most of the races of the world, but Stockard believes that our preventive measures as carried out at present will not be continued when the food supply becomes diminished to such an extent that all the world will suffer.

He foresees the day when the great problem of preventive medicine may be the prevention of physical and mental, or structural, defectives, which he holds is best done by eliminating the germ-plasm from which they arise, and the preservation of biological good stock.

There is no doubt that the blood stream can carry enough alcohol to injure the less resistant cells, but the ability of the blood to tolerate the presence of enough alcohol to injure the entire cell population, the strong as well as the weak, is questionable. It did not happen in the experimental animals, though they were subjected to more severe treatment than human beings probably ever undergo. Stockard concludes: "It is highly improbable that human beings have ever injured or eliminated their normal resistant germ-cells with alcohol. Alcohol has probably eliminated some of the bad. Those nations of men that have used the strongest alcoholic beverages through many generations have now, from a standpoint of performance and modern accomplishments, outstripped the other nations with less alcoholism in their history. This may be due to some such selective effects as those recorded in the foregoing pages."

A FIELD FOR PREVENTIVE MEDICINE

That more or less obscure group of diseases classed as "rheumatic" has been the subject of investigation in England. The work was directed by a central group of eight medical officers of the Ministry of Health under the Chairmanship of Sir George Buchanan, and carried out by fifty selected insurance practitioners in the various parts of the country whose observations extended over a period of one year.

The diseases were classified in three main groups:

A. Acute rheumatism (rheumatic fever), together with subacute rheumatism.

B. Nonarticular manifestations of so-called rheumatism (muscular rheumatism, fibrositis, etc.)

C. Diseases characterized by chronic joint change. These three groups were further subdivided into nine diseases.

The number of insured persons in England and Wales is estimated at 13,500,000. The number under observation in this study was 90,891, of which 57,988 were males and 32,893 females, a fairly typical distribution of the sexes in the insured population. Among this group 2,510 cases of rheumatic diseases, 1,771 males and 739 females, were carefully studied.

The year during which this investigation was made, 1922, showed a continued low temperature from June to November, but the amounts of sunshine and rain were approximately normal. With the exception of the first three months, it was generally agreed that it was an unusually healthy year with appreciably less rheumatic disease than usual, and the records show that so far as mortality goes it was the healthiest year ever known in England.

The study gave some extremely interesting results, but showed that further research along bacteriological, pathological and biochemical lines was much needed. It appeared that tonsilar sepsis was an important factor in the causation of acute and subacute rheumatism. Approximately 50 per cent of the acute cases had enlarged or septic tonsils, and only 2 per cent of those with acute rheumatism had undergone the removal of the tonsils. Approximately 50 per cent of those with acute rheumatism and 25 per cent of those with subacute rheumatism showed endocarditis, either recent or old.

More than 75 per cent of the rheumatic patients above twenty-five years of age showed dental sepsis to some degree, while patients with chronic joint diseases showed an even higher percentage. There was a striking confirmation of the old belief that rheumatic disease is closely related to dampness of houses, and Sir George Newman emphasized this point by saying, . . . "at the present day it is universally accepted that serious dampness is one of the worst defects possible in a house."

It would appear from this survey that the proper care of the teeth and of the tonsils would go far in lessening this type of disease. In the nonarticular type dental sepsis and chill seem to be the chief preventable causative factors. The etiology is however obscure, and even greater uncertainty exists in the prevention of those types in which chronic joint changes are seen. The importance of this type of disease is recognized by everyone, though to what extent is probably not known. In England, this type of disease costs approximately $10,000,000 annually in sick benefits, and deprives the nation of 3,141,000 weeks of work from the insured population alone, not including the losses from organic heart diseases, which are largely rheumatic in origin. Half of this loss, both as regards money and time, is due to the chronic joint diseases.

ASSOCIATION NEWS

LIST OF MEMBERS

Proposed for election to the A. P. H. A. March 29 to April 28, inclusive
Names of New Members are set in Light Face Type.
Names of Sponsors are set in **Bold Face** Type.

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Nordahl O. Gunderson, M.D., City Hall, Rockford, Ill. Commissioner of Health.

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John S. Fulton, M.D., Baltimore, Md.
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Nora McQuade, R.N., 239 High St., Fall River, Mass. Supervisor of Nurses, Infant Welfare Commission.

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Herbert Linwood Freese, P. O. Box No. 416, Norton, Va. Bacteriologist.

Homer N. Calver, New York, N. Y.
Kolbe Curtice, Halifax County Health Dept., South Boston, Va. County and City Health Officer.

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William John Fordrung, B.S., M.A., M.D., 2959 Grand Concourse, New York, N. Y. Practising Physician.

NEW EXECUTIVE FOR NATIONAL HEALTH COUNCIL

Dr. A. J. Lanza has been appointed executive officer of the National Health Council, according to a statement given out by the Council. Dr. Lanza comes to this position, which is one of the most desirable in public health work in the country, after three years' absence in Australia where he assisted in the organization of the Commonwealth Health Department. Dr. Lanza was formerly an officer in the United States Public Health Service and during the war performed notable work in developing industrial hygiene in this country. He succeeds Dr. D. B. Armstrong, who resigned on January 1st. During the interim Mr. James A. Tobey, administrative secretary of the Council, has been acting as executive. Officers of the Council for 1924 include Dr. Lee K. Frankel, Chairman; Dr. W. F. Snow, Vice-Chairman; James L. Fieser, Recording Secretary, and Dr. Linsly R. Williams, Treasurer. The National Health Council comprises the twelve leading national voluntary health agencies of the country, together with the United States Public Health Service and the United States Children's Bureau as conference members.

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REPORT ON SEWERAGE AND SEWAGE DISPOSAL

In this Section of the April JOURNAL, there appeared an announcement that the Committee on Sewerage and Sewage Disposal of the Sanitary Engineering Section is engaged in revising the definitions used in connection with sewerage and sewage disposal. Fellows and members of the Section were urged to consult the Report of the Committee published in the October, 1917, JOURNAL, and send their criticisms and suggestions to the Chairman to aid him in his work.

Because of the importance of the Report, it has seemed best to have it reprinted and distributed to the Sanitary Engineering group, in order that they may inform themselves on the material involved and in order to give them the opportunity to offer suggestions for revisions that they consider desirable. It is now ready for mailing, and a copy will be sent to every sanitary engineer who will send his name and address to the Association office, 370 Seventh Avenue, New York City.

FRAUD

A short time ago one of the editors of the JOURNAL received from the International Book Concern of Los Angeles a book by Pierson W. Banning entitled "Mental and Spiritual Healing, All Schools and Methods. A Textbook for Physicians and Metaphysicians."

This book had been widely advertised by news items which were published in standard Journals like *The New York Times*, and also in some Medical Journals with the statement that it had obtained the first prize, 2,500 pounds, from a foundation made by Benjamin Franklin in London, more than 150 years ago. A very cursory examination of the book revealed its character, full of mysticism pure and simple, and with very little in it which a physician would care to have, except quotations from other books published by peculiar cults. The editor, feeling that he might be at fault, submitted the book to a Professor of Psychology, who condemned it utterly. It was next submitted to the *Journal of the American Medical Association*, which at once undertook an investigation with the results which have been widely published in that Journal. An investigation was also begun by one of the editors of this JOURNAL. He obtained the information from the American Philosophical Society, of Philadelphia, that no such fund had ever been established as far as could be ascertained. The matter was taken up with the British Consul in Philadelphia and through him with authorities in England.

In view of these investigations and what was found out, Mr. Banning finally confessed that the whole thing was a hoax, or as he was pleased to call it, "a joke" on his part intended to put over a bet made with a friend. It seems to us that the mails have been used to defraud people, and news items inform us that the Post Office Department is awaiting a formal complaint to be made against Mr. Banning. Just why they wait for a formal complaint with such evidence as is at hand is not clear. The readers of this JOURNAL are advised not to waste their money on the book, which is not even worth a review. As a book, 50 cents would be a good price, though $3.50 is charged for it. Extensive details have also been published by the *Journal of the American Medical Association*, and a more complete article will soon follow in that Journal.

EMPLOYMENT BUREAU

POSITION WANTED

Positions wanted announcements will be carried for individuals at a charge of $2.00 per insertion. Copy should be received at the New York office by the 8th of the month preceding publication.

Statistician desires a new connection. He has had ten years' experience in directing statistical research and surveys, chiefly in state and municipal bureaus, including service as state registrar of vital statistics. Also five years' experience in field and office work with Federal statistical bureaus. Fellow of Vital Statistics Section, American Public Health Association. References gladly provided. Address 297 Stat., care of this JOURNAL, New York address.

Wanted: Position by man just completing work for D.P.H. degree in one of our leading schools of public health. Seven years' experience in state and municipal departments. Address, 298 R. B., care of this JOURNAL, New York address.

Wanted: Position by laboratory director. Last position, director of laboratories of large city. Thoroughly conversant with the handling of laboratories and all types of laboratory problems. Fellow of the A. P. H. A., Laboratory Section. Address 299 K. E., care of this JOURNAL, New York address.

Wanted: Position in city, county or state health department by man experienced in city and rural work and with university training in public health and M.D. degree. Available immediately. Address 291 Phil, care of this JOURNAL, New York address.

Wanted: Position by physician with C.P.H. degree. Past nine years exclusively in public health work and preventive medicine. Prefers connection with life insurance company, in industrial hygiene, or public health administration. Available soon. Excellent references. Address, Hygiene, 294, care of this JOURNAL, New York address.

Wanted: Greater opportunities by a licensed woman health officer. Present position, school nurse and health officer, held for six years. Had seven years of private and district nursing experience before present position. Very best references from local and state boards. Present salary $2,100. Widow, thirty-seven years of age. Change of location desired for family reasons. Could begin service in August or September, 1924. Address 293, C. M., care of this JOURNAL, New York address.

Wanted: Position as director or assistant director of public health laboratory, West or Southwest preferred. Six years experience in public health laboratory and bacteriological research. Collage graduate. Thirty years of age, married. Available July 1. Address 295 V. F., care of this JOURNAL, New York address.

Home Economics: Woman with B.S. degree from Columbia, broad training and experience in teaching and administrative work in foods and nutrition, desires to locate in public health work. Address 296 P.D., care of this JOURNAL, New York address.

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 8th of each month for publication on the 20th. Mail to New York office as early as possible.

In answering keyed advertisements, please mail replies separately to business office in New York City. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Class A. midwest medical college will about January 1, 1925, appoint an assistant professor at a salary of $3,500. Duties involve didactic laboratory and field instruction for medical and nursing students. Opportunity for independent research. Excellent hospital connections. It is desirable that appointee have M.D. or D.P.H. degree. Preferably male not over thirty-five. Applicants should supply all possible information. Address 564 D. K. M., care of this JOURNAL, New York address.

Wanted: Statistician, child health demonstration, small community. Experienced, responsible. Address Room 1624, Penn Terminal Building, New York, N. Y.

Private organization doing work in occupational diseases and general industrial medicine desires the services of a young physician with experience, or definitely interested in this field of work. Appointment permanent, if competent. Salary about $3,600 for first year, with additional monies for certain expenses. Opportunity for research, university connections, etc., if qualified. Position open immediately. Applicant should not be over thirty-five. Communicate with 563, M. R., care of this JOURNAL, New York address.

HEALTH OFFICER'S EXCHANGE

OUR BOYS NEED GREATER PROTECTION FROM AUTOMOBILES

In Mortality Rates, 1910–1920, recently published by the Bureau of the Census, appear the following mortality rates:

DEATH RATES FROM AUTOMOBILE ACCIDENTS AND INJURIES PER 100,000 POPULATION

Age and Sex	Registration States 1920	Registration States of 1910 1920	Registration States of 1910 1910
All ages			
Male	15.3	18.0	2.7
Female	5.3	6.2	0.8
Under 5 years			
Male	9.5	11.7	0.5
Female	5.8	7.4	0.6
5 to 14 years			
Male	19.9	25.2	3.6
Female	6.1	7.6	1.3
15 to 44 years			
Male	12.5	14.0	2.2
Female	3.2	3.6	0.5
45 to 64 years			
Male	16.3	18.9	3.4
Female	7.3	8.5	0.8
65 years and over			
Male	33.8	38.7	6.9
Female	13.8	14.9	1.3

As men drive and use automobiles far more than women, higher mortality rates for men from automobile accidents are to be expected. But no such reason exists for the comparatively high rates of boys under fifteen. Here the additional danger is due to the fact that boys will be boys—they will play chase, they will hook on to moving vehicles, they will play ball in the street, and they will take unnecessary risks of all kinds. Self-reliance and fearlessness, qualities so desirable in young men, have brought many a boy to an untimely end beneath the wheels of an automobile. The existence of this great danger to the boys of to-day is well known. Nearly every newspaper carries the report of some new tragedy of this kind. These figures are th refore presented merely to emphasize again the great need for

(1) More good playgrounds;

(2) More safety zones near schools;

(3) More safety-first teaching at home and especially at school, and, last but not least,

(4) More careful driving.

Wm. H. Davis,
U. S. Census Bureau

WHY NOT PROTECT OUR GIRLS AND WOMEN FROM FIRE?

In Mortality Rates, 1910–1920, recently published by the Bureau of the Census, appear the following mortality rates:

DEATH RATES FROM BURNS (CONFLAGRATION EXCEPTED) PER 100,000 ENUMERATED POPULATION

Age and Sex	Registration States 1920	Registration States of 1910 1920	Registration States of 1910 1910
All ages			
Male	6.1	6.1	6.4
Female	9.0	8.4	8.7
Under 5 years			
Male	28.7	28.7	32.5
Female	34.0	33.8	32.4
5 to 14 years			
Male	3.3	3.5	3.0
Female	9.1	7.9	8.7
15 to 44 years			
Male	3.0	3.1	3.0
Female	3.3	2.9	3.3
45 to 64 years			
Male	3.4	3.4	3.5
Female	5.7	5.5	5.9
65 years and over			
Male	7.8	7.2	8.9
Female	20.9	18.7	20.4

These figures stand out as a mute appeal from our young daughters and elderly women for protection from fire. How shall this appeal be met? Can we not, at least, insist that our young daughters wear some fire proof material when they work about the kitchen stove or when they play about the open grate or the brush fire? If this is done the women will soon protect themselves, and as a matter of simple psychology, if the need of extra precaution for young girls and elderly women is recognized, necessary precautions will be taken more often by all members of the household.

Wm. H. Davis,
U. S. Census Bureau

BOOKS AND REPORTS REVIEWED

Barrier Charts for Health Officers.—*A Synopsis of Preventive Measures Against Communicable Disease, in Four Tables. By S. H. Daukes, O.B.E., M.B., D.P.H., D.T.M.&H. Welcome Bureau of Scientific Research, London, N. W. 1. Baillière, Tindall & Cox, 8, Henrietta Street, Covent Garden.*

We have received from the Welcome Bureau of Scientific Research a set of these charts, four in number. Chart I concerns the Alimentary Group of Diseases, II the Inoculation Group, including insects, III the Respiratory Group, and IV the Contact Group. In a concise manner they emphasize the particular preventive measures which experience and research have shown to be effective. For each set of diseases the incubation and quarantine periods are given, and the four existing barriers are described, with the results which follow when these barriers are defective. The charts are enclosed in a convenient cover for field use, and furnish a useful and compact record of information for all diseases with which field officers come into contact. They are particularly useful for field work, but may well be posted in the offices of health officials as a ready reference for health workers.

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Methods in Medicine.—*The Manual of the Medical Service of George Dock, M.D., Sc.D., Formerly Professor of Medicine, Washington University School of Medicine; Formerly Physician-in-Chief Robert A. Barnes Hospital, St. Louis. By George R. Herrman, M.D., Ph.D., St. Louis: C. V. Mosby Co.*, 1924. Cloth. Price, $6.50.

This manual is a description of the plan followed by Dr. George Dock at the Barnes Hospital, St. Louis, for his Medical Service. It includes a number of features adopted from the service of Dr. Henry A. Christian at the Peter Bent Brigham Hospital, Boston.

Reviewing a work such as that before us is not easy. There is such a quantity of material, and it is so diverse in character from page to page that it is much like criticising an encyclopedia. Proposed methods are so numerous and often of such doubtful value that an author must exercise great judgment in his selection. This task has, we believe, been accomplished in an excellent manner. The various tests are well selected and are those generally accepted as the most accurate. The material is well arranged, and the descriptions given in readable and understandable language. The various tests are explained fully so that each step is made clear to the reader.

The book is divided into five parts:

I. Administrative methods.

II. Special clinical and laboratory methods.

III. Approved dietetic methods.

IV. Accepted therapeutic and emergency measures.

V. Methods of recording histories and other data which have been determined from the study of the patient.

In the consideration of emergency measures, we feel that the author has failed to give due weight to a very important procedure, blood transfusion. This is generally classed as a medical procedure and is one which is often used on the medical wards in emergencies, and also as a nonemergency measure.

The drugs considered are well selected, though not everyone will agree with the author's advocacy of strychnine as a heart stimulant, or his statement that morphine in pneumonia predisposes to pulmonary oedema.

In general the book is a valuable collection of administrative laboratory and therapeutic methods. It can be read with profit not only by the house officer in internal medicine, but also by those in the other services of the hospital. It will not be amiss to recommend it also to the hospital superintendent, as too often he knows but little of the problems of the clinical side of hospital work.

The book is printed and put together in excellent fashion, only a few errors having been detected. The divisions as given in the preface do not correspond with the index and text, Parts III and IV having been transposed.

Publicity Methods Reading List.—*Evart G. Routzahn and Mary Swain Routzahn. Russell Sage Foundation, 130 East 22d St., New York City,* 1924. 48 Pp. 30 cents.

Publicity Methods Reading List tells where to turn for much of the varied information needed by those who wish to spread information, influence public opinion and to secure action in any of the many fields of social endeavor.

Publicity, propaganda, education, advertising—whatever we call it—is a factor in all forms of social work. To accomplish the aims of social publicity—to spread information, to awaken interest, to enlist helpers, to raise funds, to win votes, to extend good health habits, to get patients to clinics—makes increasing demands upon workers in all fields. This pamphlet lists a careful selection from hundreds of possible references. Brief descriptions seek to indicate the particular value of each reference so that a quick selection can be made when the need arises.

The 233 references are grouped under these subjects: Public Opinion; The Technique of Publicity: General Advertising, Annual Reports, Campaigns, Copy, Diagrams and Charts, Exhibits, Lists, Mail, Motion Pictures, Newspapers, Photography, Plays and Pageantry, Posters, Printing, Projection—General, Public Speaking; Publicity Methods in Special Fields: Boy Scouts, Church and Sunday School, Community Improvement, Family Welfare, Federation or Council of Social Agencies, Industrial Relations, Public Health, Rural Communities, School and College.

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Allgemeine Abstammunglehre, Jugleich eine gemeinverständliche Kritik des Darwinismus und des Lamarckismus.—*Von Dr. Richard Dürken, Berlin, Gebrüder Borntraeger.* 205 pp., 38 figs. in text. Price, $1.00.

A much needed critical résumé of the present status of the opposing theories of Neo-Darwinism and Neo-Lamarckianism is found in this handbook from the pen of one of the younger experimental biologists of Germany. The author reassembles some of the evidences, largely from recent sources, for organic evolution, from paleontology, morphology, embryology, comparative anatomy, and geographical distribution; touches rather lightly on the phenomena of mutation and hybridization and then turns to a criticism of the two contrasted interpretations of the Neo-Darwinian and Neo-Lamarckian schools. He rejects them both as critical or satisfactory explanations of the origin of new characters in the hereditary constitution of organism. The value of the attempt lies in the author's clear definition of the problems involved and in his appeal for critical experimentation. His bibliography is confined wholly to German sources. No recognition of the possible relation of disease or pathogenic processes as aspects of the evolutionary process seems to occur to the author.

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Rejuvenation: The Duty, the Possibility, and the Means of Regaining Youth.—*Doctor Jean Frumusan. With Preface by Jean Finot. Translated from the fifth French edition by Elaine A. Wood. Seventh Edition. London: John Bale Sons & Danielsson, Ltd.,* 1923. Cloth. Price, 7s. 6d. net.

This book, the second English edition, is a translation from the fifth French edition, all of which appeared in the space of some eighteen months.

It contains a great deal of sound advice concerning the care of the body, and points out the most common errors observed in people generally. The thesis of the book is that premature old age is the result of many sins of excess and sins of omission; that equilibrium may be restored by depuration, since auto-intoxication, or intoxication of some other sort, are the common results of such sins and manifest themselves in premature senility. The author believes that promiscuous taking of drugs results more often than we are aware in a form of intoxication which is harmful. The treatments recommended are for the most part rational, and belong to well recognized procedures. Among these, however, here and there treatments are recommended which one is compelled to believe have only a suggestive effect, and others which may be considered not only useless, but positively dangerous, provided that laymen, for which the book is evidently written, attempt to carry them out without professional advice. For example, ozone is spoken of as being

stimulating, tonic and bactericidal, and is recommended for inhalations for "tonyfying the respiratory ducts and encouraging haematosis"; it clears the chest, excites the appetite, gives refreshing sleep, enriches the blood, activates circulation, is sedative to hypertension and is a "regularizing" agent for arterial pressure!

In spite of these defects the book is one which on account of the vast amount of good advice given, and the interesting way in which it is written, will accomplish a useful purpose. Apparently the translator is not familiar with medical terms and some unusual, if not bizzare, English words are used, as shown by the above quotations.

□

PUBLIC HEALTH LABORATORY NOTES

C. C. YOUNG

Scarlatinal Serum.—Concentration with ammonium sulphate is useful for demonstrating specific streptococcus agglutinins in scarlatinal serum. Unconcentrated scarlet fever serum 1:10 fails to agglutinate hemolytic streptococci, specific for scarlet fever. When concentrated with ammonium sulphate, 25 per cent of the scarlet fever serums collected before the eleventh day of the disease and 92 per cent of the serums collected after the eighteenth day, agglutinated scarlatinal strains of streptococci, but not the other streptococci tested. Serum unconcentrated and concentrated, from diphtheria patients and from a patient who had scarlet fever two years previously, failed to agglutinate any of the streptococci examined. Authors Summary.—Herrold and Tunnicliff, *J. Inf. Dis.*, 34:209, (March) 1924. M. S. M.

✚

Bacteriological Examination of Ground Beef With Reference to Standard Analysis.—I. Relation of Bacterial Count and Aerobic Species Present to Spoilage.—The literature on investigations of decomposing foods is cited and a report made upon a comparative study of bacterial count of meat organoleptic test and sanitary conditions. The meat was purchased at 49 places; 22 samples came from public markets and 27 from shops. Two methods of procedure were followed, viz.: Weinzirl and Newton's (J. Pub. Health, 4:413, 1914) and St. John's (Tanner's Bacteriology of Food, Chap. XIII). The author found that: 1. The total aerobic bacterial count or count of dextrose fermenters is unreliable as a standard for meat analysis. 2. The presence of an aerobic form or group cannot be taken as an index to the freshness of the meat. 3. There was no relation between initial counts and counts in subsequent spoilage of samples. 4. There was no relation between the percentage of proteolytic aerobes and the type of spoilage. II. Anaerobic Species Present in Ground Beef and their Relation to Spoilage.—One hundred fifty-two examinations were made for anaerobes on 44 samples, using the following technique. Two tubes, each of deep litmus milk, 1 per cent lactose, 1 per cent dextrose broth and liver broth were inoculated with small portions of meat after the tubes had been boiled to expel the air. After inoculation they were heated in a water bath to 80° C. for ten minutes to kill the vegetative cells of nonsporebearing organisms present, cooled rapidly and incubated for from two to three days in a McIntosh and Fildes jar. One c.c. of the contents of each tube was then removed by means of a sterile pipette and added to 1 c.c. of sterile water and heated again to 80° C. for ten minutes. One c.c. of this was inoculated into Rettger's meat and egg medium and incubated in a McIntosh-Fildes jar. Unheated portions of the original cultures were used as checks on those which were heated before inoculation into the meat tubes, and in all cases the same anaerobes were isolated. From any tube showing signs of digestion, plates were made on 2 per cent liver agar. These were plated from five to seven times in order to obtain pure cultures. They were then grown, for identification, on alkaline egg broth, egg cube, litmus milk, brain, gelatin, meat and egg media and 1 per cent dextrose, maltose, saccharose, lactose, mannit, raffinose and starch broths. Layering with sterile vaseline to obtain anaerobiosis was found very satisfactory in the identification of the organisms. From the results obtained in the investigation the author concludes that the presence of proteolytic anaerobes indicates a definite way by which the keeping qualities of meat can be predicted. The

above technique for indicating their presence can be easily adopted for laboratory use. The McIntosh-Fildes jar can be dispensed with and anaerobiosis can be successfully obtained by layering with vaseline. The meat tube, according to Holman, remains anaerobic without any further treatment. The length of time for reading results could thus be shortened.—Rachael E. Hoffstadt, *Am. Jr. of Hygiene*, 4:33, (Jan.) 1924. C. C. Y.

✤

Buffeted Physiological Salt Solution.—A standard salt solution for immunological work of constant properties is proposed, the formula being 7.0 gm. of NaCl, 1.7 gm. of secondary Na phosphate (2 molecules of water), and 0.2 gm. of primary K phosphate for each liter of double distilled water. This has a pH from 7.4 to 7.8 and a salt concentration of 8.9 gm. per liter. Constant results were secured with the Kolmer technic.—Mason and Sanford, *J. Lab. and Clin. Med.*, 9:313, (Feb.) 1924. M. S. M.

✤

Streptococci in Relation to Etiology of Epidemic Encephalitis.—The author made a study of 81 cases of epidemic encephalitis over a period of four years. Material for cultures and injections was obtained from nasopharynx, pus from tonsils and aspirated from the depths of pyorrhea pockets, before death and from the brain and medulla in fatal cases. Consistent results were obtained in undoubted cases. Peculiar streptococci, much alike in different cases, were isolated constantly from infected teeth, tonsils, nasopharynx before death and from the brain after death. Consistent characteristic symptoms and lesions of different forms of encephalitis were obtained in animals from cultures, both freshly isolated and those that had been rapidly subcultured for more than forty generations. The author was unable to duplicate his results with green producing streptococci cultures which he obtained from nonencephalitic patients. Most of the strains isolated from encephalitic patients were immunologically alike, as determined by agglutination experiments with "hyperimmune" serum. The serum of the patients with acute forms of the disease agglutinated specifically the homologous and many heterogenous strains. The author obtained the organisms from filtrates of nasopharynx washing, or emulsions of the brain in fatal cases.—Edward C. Rosenow, *J. Inf. Dis.*, 34:129, (April) 1924. L. D. H.

Capacity of Platinum Loop.—The author has made a systematic study of the accuracy of quantitative duplication of amounts measured by the platinum loop. Figures are given for the loops made and used by him, and several methods for the measurement of the volume of liquid taken up by the loop are described. The problem was taken up in connection with the making of plate counts of milk.—Miller, *J. Lab. & Clin. Med.*, 9:404, (March), 1924. M. S. M.

✤

Biologic Study of Aciduric Bacteria.—A biological study of 64 strains of B. acidophilus and 34 of B. acidophil-aerogenes was made. These organisms were isolated from 93 different sources, mostly from the sputum and feces of normal human adults. Dried autolyzed yeast was used as the basis for all the fermentation tests, and was particularly satisfactory for the study of these members of the aciduric group. These bacteria are facultative anaerobes, but grow well under aerobic conditions. They do not liquefy gelatin, and may or may not clot milk. They grow best in a reaction of pH 6 to 7, but will develop within the range of pH 5.0 to 7.6 at least. When grown in dextrose yeast broth in mixed culture with B. coli, with an initial reaction of pH 7.0 to 7.6, B. coli at first gains the ascendancy, but B. acidophilus becomes predominant as the pH approaches 5. In the case of 22 strains, both aciduric and fermentative characteristics were practically constant for 12 months. The fermentation reactions for 20 carbohydrates were determined, all negative tests being checked at least twice. A classification according to the scheme of Rahe is given. Author's Summary.—P. R. Cannon, *J. Inf. Dis.*, 34:227, (March) 1924. M. S. M.

✤

Salt Effects in Bacterial Growth.—IV, The Physical Nature of Bacterial Growth in Various Concentrations of Neutral Salts.—The authors discuss the physical nature of the growth produced by organisms. Experiments were carried out to determine the relation of turbidity to the rate of growth in various concentrations of neutral salts. They believe their results indicate that the phenomenon of dispersed growth obtained when small amounts of neutral salts are added is probably not due entirely to changes in surface tension of the medium. They consider that in the presence of small amounts of neutral salts, the permeability of the cells is greater. They conclude that the increased turbidity or diffuse growth in the

presence of an optimum amount of neutral salts is due to an effect upon the organisms themselves rather than upon the physical property of the media.—G. E. Holm and J. M. Sherman, *Proc. Soc. Exp. Biol. and Med.*, 21:331, (March) 1924.

✤

Characteristics and Occurrence of Hemophilic Bacilli.—Morphological variants among strains of the Pfeiffer bacillus were studied and described. Indol was produced by 57 per cent of 220 strains from various sources. Nitrate reduction was demonstrated by all of 287 strains tested, as contrasted with negative results from B. pertussis and B. bronchisepticus strains. Fermentation with dextrose and saccharose divide the Pfeiffer bacilli into groups which fail to show any immunological or epidemiological significance. Pfeiffer bacilli were found more commonly in persons with a history of influenza than in those with no such history; in persons with colds than in those without colds; in throats of healthy persons in March, 1922, than at other times of the year; in some healthy persons than in others. Hemolytic types of Pfeiffer bacilli were found in about 15 to 16 per cent of the strains isolated; two types of hemolysis are characterized in this group. A characteristic nonhemolytic type was isolated from the respiratory tract of a healthy rabbit.—Jordan and Reith, *J. Inf. Dis.*, 34:239, (March) 1924. M. S. M.

✤

A New Indicator for Testing Reducing Power of Bacteria.—The author studied the uses of dyes in bacteriology in connection with isolating pure cultures and determining the oxidizing and reducing powers of bacteria. Para nitro-malachite green was used, 1:10,000 dilution in plain broth which had a pH of 7.4 and the dye was also used in 10 per cent horse serum in normal saline. Fourteen different bacterial species consisting of 48 strains in all were studied on the plain broth, all members of the colon-typhoid group tested, except Balkaligenes, reduced the nitro compound. In the medium containing horse serum, however, B. typhosus was the only species of this group that gave a strongly positive reaction. In the plain broth medium of five species of cocci examined, meningococci possessed the greatest reducing power. Streptococcus hemolyticus and Staphylococcus aureus and albus reduced the dye but to a lesser degree. None of eleven strains of pneumococcus or the four strains of B. diphtheriae gave any reduction in either medium. Meningococcus was the only species of this group that gave a positive test in the 10 per cent horse serum medium. These organisms that give a positive reaction reduce the p-nitro malachite green to a red compound. It is known that the nitro group in acid solution is reduced to an amin, and is therefore assumed that the change of color from green to red indicates that the para-nitro malachite green was reduced to the para-amino malachite green by the action of these organisms. The author makes the assumption that the reduction of the p-nitro group to p-amino group may be interpreted as an index of the oxidation reduction potential of growing microörganisms. —Lloyd D. Felton, *J. Inf. Dis.*, 34:414, (April) 1924. L. D. H.

✤

Soluble Aluminum and the Hemotoxylin Test in Filtered Waters.—The minimum solubility of $Al(OH)_3$ occurs in solutions with pH values between 5.7 and 7.3. If the water is beyond this pH range the filtered water will contain some aluminum in solution. It is desirable to have a test for aluminum which can be used in routine procedures. The test here proposed gives accurate results to 0.1 p.p.m. It consists in forming the hematoxylin-aluminum color in a pH of 8.2 or 8.3 and then acidifying to pH 4.5. This removes the objectional reactions which have prevented this test from being used. The method in brief follows: Reagents: 1. Dissolve 0.1 g. hematoxylin in 100 c.c. boiling distilled water. This solution is stable for three weeks. 2. A sat. solution of ammonium carbonate. 3. A 30 per cent solution of acetic acid. 4. A standard solution of ammonium alum prepared by dissolving 0.8366 g. of the salt in 1 liter of solution. 1 c.c. of this solution in 5 c.c. of distilled water is equivalent to 1.0 p.p.m. Al. Procedure: To 50 c.c. of the water to be tested in a Nessler tube add 1 c.c. of sat. ammonium carbonate and 1 c.c. hematoxylin solution. Mix by inverting tube twice. Let stand 15 minutes and then acidify with 1 c.c. of 30 per cent acetic acid. Compare with standard prepared in the same manner.—Wm. D. Hatfield, *J. Ind. Eng. & Chem.*, 16:233, (March) 1924. E. F. E.

✤

The Kottman Reaction in the Insane.—The Kottman test is a simple chemical serum or spinal fluid test offering a good index to thyroid activity. It provides a method of esti-

mating the frequency and extent of impaired function of the thyroid gland in those who are becoming mentally unbalanced. The author has made 500 tests with encouraging results.—Saunders, *J. Lab. & Clin. Med.*, 9:401, (March) 1924. M. S. M.

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Laboratory Diagnosis of Throat Infections.—1. The Blood Plate as an Aid to Diagnosis.—The routine adopted for the examination of throat swabs submitted for diagnosis to the laboratories of the Michigan Department of Health is to smear first on a standard blood plate, second on Loeffler's serum medium, and third on a slide for immediate examination. By this procedure reports may be made on the Klebs-Loeffler bacillus, on the type IIIa hemolytic streptococcus which has, over a period of four years of study, demonstrated itself as of etiological importance greater than the other types of streptococci and on Vincent's Angina. Of these Vincent's organisms may be found only on direct examination. The blood plate offers a check on the finding of Klebs-Loeffler bacilli. Comment is made on other methods of identification of streptococci, but the routine blood plate has been found the most satisfactory. The blood plate used consists of a standard 2 per cent beef extract agar to which 5 per cent of sterile sheep's blood has been added. The plates are made daily, and incubated over night before using. One plate serves for six swabs, the plate being marked in six wedge-shaped divisions. A key is given for the classification of the streptococci found. Based upon the observation that an invading organism wipes out the normal flora, only cultures showing 90 to 100 per cent of pure culture are considered diagnostic. A careful study of the distribution of hemolytic streptococci from the standpoint of the diagnostic laboratory revealed the value of the streptococcus reports, both to the clinician and from the public health angle, since it enables a state regulation requiring the isolation of cases of septic sore throat. During the four year period previous to 1919, when the blood plate was made a routine procedure, only 22.9 per cent of the swabs submitted gave positive results, the remainder being of only negative value. This compares favorably with other state laboratories. The addition of the blood plate, together with the direct examination, has brought the negative results down to 21 per cent, thus raising the positive reports from 22.9 per cent to 79 per cent.—Dr. C. C. Young and Minna Crooks, *J. Lab. and Clin. Med.*, 9:409, (March) 1924. M. S. M.

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Transmissible Lysis of B. pyocyaneus.—The author describes various cultural variations in the growth of B. pyocyaneus from the standpoint of the bacteriophage (Twort's phenomenon, d'Herelle's phenomenon). The culture used was freshly isolated from a suppurating lesion on the forehead of a patient; the autolytic characteristics were observed after a 48 hour incubation of an isolated organism from the original pus. Cultures exhibiting this autolytic characteristic have been variously isolated direct from patients ill from different diseases, and the variations are of sufficient extent to make the ordinary identification of the organism problematical unless the characteristics of such more or less commonly found autolytic strains are understood and recognized. Autolytic strains may be resolved by isolation into an "R" strain and an "L" strain, the former being resistant to lysis and the latter being autolytic on subsequent transfers, regardless of number of generations. The "L" strain: colonies, leaf-like and expansive with fimbriate margins, highly pyocyanigenic, but producing also fluorescin, and containing one or more roughly circular, corroded or pocketed areas, measuring from 1 to 5 mm. in diameter, in which bacteria had largely disappeared, leaving the surface bronze colored or iridescent; agar slant cultures present similar features, the lytic areas being limited to middle and lower portions of the tube; possessing remarkable growth energy in broth and on agar; highly proteolytic with production of indol; medium grade of virulence for guinea pigs; on plating, giving rise to colonies of both the "L" and the "R" type. The "R" strain: colonies round, of limited size and somewhat massive and highly viscous growth, homogeneous in texture, forming only the yellow pigment and no pyocyanin; similar homogeneous growth on agar slants with no lytic pockets; slight or delayed proteolytic action on milk and gelatin; more virulent than the "L" strain for guinea pigs, giving rise on plating to "R" type colonies only. The Twort phenomenon, the d'Herelle phenomenon, and the lysis of pyocyaneus are all considered to be due to the same fundamental cause, the latter being a "low speed" reaction exhibiting the successive stages occurring in the two former phenomena. —Philip Hadley, *J. Inf. Dis.*, 34:260, (March) 1924. M. S. M.

PUBLIC HEALTH ADMINISTRATION

LOUIS I. HARRIS, M.D.

Dr. Eliot Incorporates a Health Plank in his Platform.—Dr. Eliot, President Emeritus of Harvard University, in common with other students of world problems discusses the present condition of the political life of our Nation. He points out the acts of omission and commission by which we have sunk to our present low state. There is need for a new, a strong leader, with vision, courage and unwavering firmness. Among the planks of the platform which he hopes to see such a leader offer to the people, is the following:

"A promising plank might be expressed as follows: In determining national expenditures on education, public health, personal and community hygiene, and active resistance to the evils which still beset humanity, such as chronic or epidemic diseases, droughts, floods, famines, and wastes, considerations of economy should have no place. And yet the Government should chiefly foster existing agencies, and seldom supersede them."

Accustomed as we are to the policy of saving at the spigot and wasting at the bung which is evidenced in expenditures of many millions annually for items of doubtful value to the community, while appropriations for public health work are niggardly and all too inadequate, we cannot help but commend the wise economy which this plank of Dr. Eliot's platform proposes.—Charles W. Eliot, *Collier's Weekly*, (April 12) 1924.

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Protecting the Public from Exploitation.—Collier's Weekly during the first three weeks in April performed a distinctive public service. It featured three articles by Harry T. Brundidge which explained the methods by which the various types of bogus doctors and "near" doctors exploit the public. Mr. Brundidge deserves to be remembered as the reporter who, posing as "Dr. Thompson," exposed the operations of the nation-wide diploma mill. Mr. Brundidge is no statistician, but he modifies Barnum's estimate of the birthrate of gullible persons, which Doctors Pearl and Dublin would agree to, no matter how much they may differ on most other subjects. Brundidge is sure one is born every few seconds. This accounts for the success of the many charlatans who purvey new cures.

The Journal of the American Medical Association of April 28 makes editorial comment on the bold and misleading publicity methods of the chiropractors, as a result of which it was reported in many of the newspapers of the country that the New York State Medical Society had compromised with the chiropractors and would support legislation looking to the licensing of a horde of "spine thumpers." There was of course no word of truth in this report.

On April 8, Ernest G. H. Meyer, a chiropractor of Brooklyn, New York, was found guilty of second degree murder because he had caused the death of Caroline Germuth, 5 years of age, whose spine he had repeatedly manipulated to cure her of what was later proved to be an attack of diphtheria. He acknowledged in the course of the trial that he was not competent to recognize diphtheria or any other communicable disease. A chiropractor from one of the western states who admitted that he was employed as a professional witness to defend members of the cult who were in the toils of the law, denied the bacterial origin of infectious diseases and maintained that spinal adjustments were adequate to cure all diseases. Meyer was sentenced to serve from one to two years in Sing Sing.

These seemingly unrelated items of news speak volumes for the need of constructive and aggressive action on the part of public health administrators to protect the public from exploitation. What are we doing toward this end as an association and as individual public health administrators?

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A Few Suggestions as to Pertussis.—As a result of a careful study of 297 cases of pertussis, Dr. Hermann and Dr. Bell offer a number of interesting conclusions of which the following deserve special consideration:

1. Pertussis is usually not communicable after the fourth week. (Comment: Many communities have established a quarantine period of but two weeks. How many public administrators would have their own children come in close contact in school or

at play with a child whose attack of pertussis had its onset but two weeks before?)

2. There is no *conclusive* evidence that pertussis is an important factor in the causation of pulmonary tuberculosis.

3. Ninety per cent of the deaths were due to a complicating pneumonia. The mortality in those who had pneumonia was 18 per cent. The mortality in those who had pertussis and measles was 30 per cent.

4. Patients with pertussis should be kept in bed and in as well ventilated a room as possible. (Comment: If we had nurses enough to enforce quarantine, as we do in other major communicable diseases, and to urge that children be kept in bed, the transmission of the disease would be more readily prevented and the percentage of case fatalities resulting from pneumonia would be greatly diminished. Public health is purchasable, but the purchasers are few and miserly.)

5. When a case of pertussis occurs in an institution for infants and young children, it might be worth while to prepare an autogenous vaccine from the first case, to be used for immunizing and therapeutic purposes in the other children.—Hermann and Bell, *Archives of Pediatrics*, (January) 1924.

✣

A War Memorial of a Laudable Type.—The City of Watertown, New York, has erected a unique and praiseworthy type of memorial to the men of the city who were killed during the World War. Instead of the conventional monument or ornamental piece of sculpture the city erected a health building at a cost of $50,000 which is to be dedicated to the service of the community in the prevention and control of disease. The building will house not only the official but also the voluntary health agencies of the city.

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Full Time Again.—There is an insistent demand in many places not only for a full day's work in public health service, medical research, or clinical teaching, but for an intense and almost absolute absorption in such service. There are many estimable gentlemen who feel so strongly about it, that they are ready to brand anyone who reserves the right to practice medicine or to carry on some other branch of work during evening hours, as lacking in ethical sense and dignity and as being on a par with vulgar tradespeople. The subtle propaganda that has been responsible for this attitude has swept everything before it; one has to be either fearless, or callous to criticism, to dare assert doubt whether full time is always and everywhere essential and the only type of service consistent with idealism, ethical feeling and efficiency. One wonders how often such an attitude is a defense reaction on the part of one who suffers from an inferiority complex.

Prof. Graham Lusk, one of America's foremost physicologists in a letter to the Editor of the Journal of the American Medical Association, April 12, 1924, has ventured a word of protest that is worth reproducing here:

"What is the Matter with Full Time?"

To the Editor: One often hears the query, "What is the matter with 'full time'?" Let us speak in parables. There was once a town called X. In that town there lived an eminent citizen engaged in professional work who was in receipt of an income of $50,000. He was also the head of a local museum of art containing some beautiful objects. The representatives of the wealthiest citizen in town approached him and said, "Your knowledge of art is supreme. You have devoted much of your life to its cause. If you will become 'full-time' director we will give you a salary of $10,000 a year and to your institution $1,000,000, otherwise not one cent."

"Full time" never made Boerhaave or Friedrich Müller or Halsted, the great Johns Hopkins surgeon. It was the spirit that was in them.

I know a man, a professor of physiologic chemistry in receipt of a small salary, who declined an entirely ethical offer of $500 to make an analysis of a food product, which it would have taken him a few hours to accomplish, on the ground that such work would distract his attention from more important matters. No rules, regulations or red tape bound him to refuse this offer. *It was the spirit of the man.*

I honor Mr. Rockefeller, Jr., with all my heart. He has done great things for medicine. But I truly believe that the adoption by his agents of a plan through which the influence of the largest fortune the world has ever known is used unreasonably to fetter the lives

of physicians of middle age who have children to support and educate is *all wrong*. As in other paths in life, it is *character* and not artificial restrictions, that matters.

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Who's Out of Step?—The regulations enforced in various subdivisions of this and neighboring governments with respect to so simple a matter as the quarantine period of measles, or so much at odds with each other as to excite wonder whether this disease differs in its behavior and duration under a republican or democratic, wet or dry administration. In one locality it is proclaimed with all the solemnity and pomp of legal verbiage that those suffering from measles shall be quarantined for five days after the appearance of the rash. Another community, in the same longitude and latitude, just as solemnly proclaims an isolation period of seven days. There are still other pronouncements on the subject. This is equally true of other infectious diseases.

How is the layman likely to be impressed when he finds wide divergence in practice in communities that adjoin each other? Is scientific experience, which is supposed to govern in these matters, subject to modification according to geographical and political subdivisions? How can those whose duty it is to enforce the law by court action feel justified in demanding punishment for failure to maintain isolation for the prescribed period, if authorities disagree? If communities that maintain the longer periods of isolation and quarantine are right, then are not the other communities criminally culpable in allowing freedom to persons during the period of communicability? Is it not high time that we pooled all experiences that are well authenticated to arrive at conclusions that will conduce to uniform laws and that will offer the largest measure of safety to the communities dependent on our judgment? Is this not one of the immediate and urgent duties devolving upon our Section of Public Health Administration?

Must our regulations share with our divorce laws the doubtful distinction of differing so greatly in various communities?

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The Human Body—Its Care and Prevention.—It cannot be otherwise than that Stephen Leacock who contributes an article under the above title to the April number of Harpers Magazine has attended at least one convention of a public health association. He must have listened with rapt interest and wonder to some food experts who had been face to face with vitamines. Or he must have heard some public health educators who knew for certain that all diseases and faulty habits could be cured if only they could dictate the methods and issue the appropriate educational literature. In short, Leacock must have met the host of workers who have conceived a passion for this or that phase of public health work and who are tearing that passion to tatters. Public health workers who have not yet lost their zest for life in trying to cope with logarithms, higher mathematics, parabolic curves and similar health hazards incident to reading the effusions of statisticians, will find Leacock's article pleasant and humorous, even if the humor is broad and crude. It would be doing an injustice to Leacock and to those who may find opportunity to read his article, to quote his humorous gibes and his clownings at the expense of public health educators.

VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

Health Record for February 1924.—The general death rate for the cities of the United States during February was 14.0 per 1,000 estimated population. This is slightly higher than the mortality during the previous month (13.5), but shows a material decline from the figure for February, 1923, which was 17.4. Increased case-prevalence, as compared with January, was shown for influenza, measles, scarlet fever, smallpox, typhoid fever and whooping cough; fewer cases of diphtheria were reported. Comparison with February, 1923, shows higher morbidity from measles, scarlet fever and smallpox, with fewer cases of diphtheria, typhoid fever and whooping cough, and a very considerable decline in the prevalence of influenza.

The death rate for February, 1924 (9.9 per 1,000) is the lowest ever recorded for that month among Metropolitan Industrial policyholders. While the above figure is identical with that registered for February, 1921, the fact must be considered that infant lives were not insured at that time. It is obvious that if the relatively high mortality in this class of the business were left out of consideration this year, the rate for the month would be materially lower than the 1921 February figure.—*Statistical Bulletin*, Metropolitan Life Insurance Company, 5:9-10, (March) 1924.

✤

Mortality in Iowa, 1923.—According to state health department statistics, cancer and malignant tumors claimed more lives in Iowa in 1923 than any other disease, 2,357 in 1923 as compared with 2,147 in 1922. Death from all causes numbered 25,236 in 1923 as against 24,065 in 1922. The number of suicides, 325 in 1923 showed a great increase over the number in 1922, 122. Of the suicides, 124 chose death by firearms, 104 by hanging, 72 by poison, 14 by inhaling gas, 6 by cutting and 5 by drowning. There were only 36 deaths by homicides. Railroad crossing accidents increased slightly over 1922, 146 as compared with 137. Other deaths from auto accidents numbered 229 in 1923 as compared with 187 in 1922. Other diseases which claimed many deaths in Iowa in 1923 are: influenza, 1,318; pulmonary tuberculosis, 868; cerebral hemorrhage, 2,139; diseases of the heart, 1,614; pneumonia, 2,416; Bright's disease, 1,330.—*Sioux City Tribune*, Sioux City, Iowa, March 19, 1924.

Conjugal Condition. Sixth Census of Canada.—In Canada there were in 1921, 4,529,945 males and 4,258,538 females. Of the males 59.58 per cent were single, 37.49 per cent were married, 2.64 per cent were widowed, .08 per cent were divorced, and the state of .21 per cent was unknown. The corresponding percentages for females were 55.86, 38.32, 5.55, .09 and .18. The proportion of the unmarried of both sexes to the total of each sex has decreased from 63.55 per cent for males and 57.71 per cent for females in 1901 to 62.0 per cent for males and 57.37 per cent for females in 1911 and to 59.58 per cent for males and 55.86 per cent for females in 1921. Widowed females were 5.77 per cent of the female population in 1901, 5.31 per cent in 1911 and 5.55 per cent in 1921, while widowed males in 1901 represented 2.68 per cent of the total male population as compared with 2.33 in 1911 and 2.64 in 1921. For both males and females the percentage of married to the total population was greatest in British Columbia, 42.83 and 44.74 respectively. The percentage was lowest in the northwest territories, 22.65 and 21.97 respectively.—*Sixth Census of Canada Bulletin XV.*

✤

Census of India, 1921.—The population of India is 319,000,000. There was an increase of only 1.2 per cent in 1921 over 1911 as compared with the increase in the previous decade, 7 per cent. The main cause of this difference was the influenza epidemic which swept away about 4 per cent of the people and affected two-fifths of them. The scourge came when the economic power of the people had been greatly reduced by a succession of bad seasons. No less than 73 per cent of the people are engaged in agricultural and pastoral pursuits while only 10 per cent are supported by industry. The existence of child marriage is declining.—*J. A. M. A.*, 82:983-984, (March 22) 1924.

✤

The Thirteenth Census in Scotland, 1921.—The rate of increase in the Scottish population in the decennium 1911-1921 was only 2.6 per cent, much the lowest since census taking began in 1801. While the female increase was 3.4 per cent the male increase was only 1.7 per cent; this is to be attributed to the war. The excess of females over males is now 187,213. The excess of births over deaths was 360,180,

but taking migration into account the net population increase was only 121,953. The population of the civil divisions varies immensely. Six parishes had each over 100,000 inhabitants, while two had less than 100. In six parishes the density of the population exceeded 2,400 per 100 acres, while in 32 parishes it was less than 1 per 100 acres, the lowest being Durness with 232 acres to each unit of population. Of the burghs—all self-governing—4 have over 100,000 inhabitants, and 19 have less than 1,000. Glasgow has 1,034,174 and New Galloway 348. The urban percentage of population is 77.3 and the rural 22.7.—*Brit. M. J.*, 2:349, (Feb. 23) 1924.

✤

Public Health in British Honduras, 1922.—The estimated population of British Honduras on December 31, 1922, was 45,717. The birth rate was 39.1 per 1,000 as compared with 35.5 in 1922 and the death rate was 30.8 as compared with 24.5 in the previous year. There was an alarming rise in the number of deaths, partly accounted for by an epidemic of whooping cough. There were 9 deaths from malaria in Belize, the average mortality for the previous four years having been 12. The morbidity from this disease is decreasing, due probably to the increased precautions in carrying out the mosquito destruction ordinance. Deaths from malaria accounted for 6.7 per cent of the deaths, tuberculosis 9.2 per cent and bronchopneumonia 10.6 per cent. The climate, reputed unhealthy, does not compare favorably with that of other tropical countries with small European populations.—*Lancet*, 1:580, (March 15) 1924.

✤

Germany's Population.—Not less than 2 million Germans were killed in the war and 60 per cent of them were in the most productive ages, between nineteen and twenty-nine years. The increase in civilian mortality is shown in the tuberculosis death rate, which in 1918 was double that of 1913, although it sank in 1921 to its original figure of 15.7 per 100,000 population. The earlier elimination of the unfit and the improvement in diet explains this decrease. The general mortality rate for the war years calculated as a percentage of the 1913 rate gives a good estimate of the effect of the war on mortality. This gives: 1915, 109.5; 1916, 114.3; 1917, 132.2; 1918, 237. About 800,000 died in excess of the peace mortality.

The low marriage rate has had an effect on population. In 1916 the number of marriages was 4.1 per 1,000 as compared with the average for 1901-1910, 8 per 1,000. The birth rate in 1913 was 28.3 per 1,000, in 1917, 14.4 and in 1922, 25.4. The average birth rate during the war was about one-half that of the prewar figure. In 1915, 1916, 1917 and 1918 the number of deaths exceeded the number of births. As for the sex ratios, in 1910 there were 28.8 million men and 29.6 million women, in 1919 28.5 million men and 31.4 million women. The total population in the Reich in 1919 was only 59.9 millions as compared with 58.5 millions in 1910 and 61 millions on August 1, 1914.—*Literary Digest*, 80:20-21, (March 22) 1924.

✤

Infant and Child Mortality in Germany, 1913-1922.—The German empire before the war was among the countries having the highest infant mortality. During the war and the four years following, Germany achieved a more favorable position. The lowest prewar infant mortality rate was that of 1912, 147 deaths per 1,000 living births. This was exceeded in 1913, 1914, 1915, 1917 and 1918, the highest rate being 164. Since the war there has been an almost uninterrupted decrease in the infant mortality, the rate dropping for the first time to 129 in 1922. Enforced economy which prevented overfeeding of infants was one of the causes.

The mortality rate of children from 1-5 years of age was the lowest in 1914, 13.1 per 1,000. In 1915 the rate rose to 16.8 which has been exceeded only in 1918 (22.0) and 1919 (18.3). The rate has steadily decreased since 1919, and in 1921 it fell to 9.9, far below the minimum of 1914. Owing to a further decrease in the infectious diseases of childhood, it is thought that 1922 will show a lower mortality rate for this age group than 1921.

The mortality of the 5-10 age group has fallen in much the same way. There was an increase in the rate in 1915 followed by a moderate drop in 1916, an increase in 1917 and 1918 followed by a steady decrease until 1921. The epidemics of 1915 seemed to influence very little the mortality rate of children of the 10-15 age group; nevertheless the rate continued to rise up to 1919; since then it has decreased, the lowest rate recorded having been for 1921.—*J. A. M. A.*, 82:810, (Mar. 8) 1924.

✤

Mortality of Juveniles, Germany, 1913-1921.—Beginning with 1913, a differentiation as to sex in the mortality of juveniles began to

manifest itself in the 15-20 age group. During the war, the losses began to affect even this age group, so that the natural course of mortality in juveniles during the war can be determined only from the mortality of females. This began to rise in 1915 and reached a rate of 8.9 per 1,000 living in 1918, almost three times the rate in 1913 and 1914. The influenza pandemic affected this age group severely. After the war the fall in the mortality rate of females was almost as rapid as its rise had been but the minimal mortality rate of 1913 and 1914 was not reached until 1921. The mortality rate of males rose from 3.4 in 1913 to 24.2 in 1918 and fell to 4.0 in 1921. The individuals composing this age group suffered most from the food scarcity during the war, since the most important years of their development were in this period. The increase in tuberculosis mortality during the war naturally was very great in this group.—*J. A. M. A.*, 82:987, (Mar. 22) 1924.

✤

The Incidence of **Cancer in Egypt.**—The incidence of cancer among Negroes is not essentially different from that of Negroid, Negro-Arab or the Egyptian races. Malignant disease affecting the bones, the skin and its appendages appears to be definitely more common than in Europe or America, and may be attributed to the actinic rays of the sun of Egypt. Cancer of the breast is about the same in incidence as that in other countries. There is no chronic interstitial mastitis, which seems to negative its having any relation to cancer. There is a definite relationship from a negative point of view between the incidence of gastric ulcer and gastric cancer. There seems to be no connection between cancer of the tongue and syphilis. The progress and development of individual cases of cancer is definitely different than in England or America. The progress is less rapid, the involvement of glands less marked, and the development of metastases more infrequent. There appears to be a form of epithelioma of the alveolar margin of the jaw that exhibits most unusual features. Cancer and diet seem to have a definite relationship. With the adoption of Europeon foods, alcohol and sugar, gastric and duodenal ulcer, gallstones, appendicitis and cancer of the digestive tract appears. The almost complete absence of the nervous system also has a most important bearing on the development of cancer in Egypt. There are no suppressed emotions, no nervous dyspepsias and no gastric cancer.—*Lancet*, 1:587–590, (March 22) 1924.

✤

Influenza in Infants.—A study of the histories of about 1,000 infants who had been observed for at least 3 months shows that the frequency and intensity of influenzal infection vary with the age and also with the season. The infections were distributed almost evenly throughout the year, but they were more severe in winter. The disease had a regular course in otherwise healthy infants. The artificially fed were less resistant. Six different types are discussed. E. Nassau *Jahrbuch fur Kinderheilkunde*, 103:24–364 (December) 1923, ab. *J. A. M. A.*, 82:829, (March 8) 1924.

✤

The Future of Mental Disease from a Statistical Standpoint.—As set forth by various census reports the number of patients with mental disease in institutions has grown from 81.6 per 100,000 of the population in 1880 to 220.1 in 1922. These figures show, not more mental disease but more confidence on the part of the public in institutions for the treatment of mental patients. There are many influences for and against mental health in our modern civilization. (1) Mental disease increases as physical disease decreases; (2) the rate of mental disease is higher in cities than in rural districts. For 1915-1920 the urban first admissions in New York State were 69.5 per 100,000 and the rural 42.5. Our cities are rapidly growing and our rural population declining, we should note; (3) The rate of mental disease is higher among inferior than among superior stocks.

The factors tending to counteract these influences are (1) the prohibition of the liquor traffic; (2) the movement to check syphilis. This disease has been the primary cause of the mental disorder of more than one-eighth of the first admissions in New York State; (3) the economic condition of the people, which affects mental disease. The tendency in this country is towards better standards of living. Other smaller factors are the many mental hospitals and clinics.—Horatio Pollock, *State Hosp. Quart.*, 9:197–205, (February) 1924.

SANITARY ENGINEERING

ABEL WOLMAN, C.E.

Epidemic of Typhoid Fever and Other Intestinal Diseases in Everett, Wash., July, 1923.—Water supply taken from Sultan River, was chlorinated and of a good sanitary quality, but cross-connection with industrial fire-protection supply permitted polluted Snohomish River water to contaminate the supply. This polluted water which for 14 days had entered the supply, resulted in 77 cases of typhoid fever and at least 2,000 cases of diarrhea and dysentery.—C. E. Dorisy, *Pub. Health Reports*, 39:605, (Mar. 28) 1924. A. W. B.

✤

Soluble Aluminium and the Hematoxylin Test in Filtered Waters.—The minimum solubility zone for aluminium hydroxide extends approximately from pH 5.7 to 7.3. Filtration plants using aluminium sulfate where pH of treated water falls near the limits of or outside of this zone, the effluent will in all probability contain soluble aluminium. The modified dematoxylin test, which consists in forming hematoxylin-aluminium color compound in samples of water which have been adjusted to pH 8.2 to 8.3 and then acidifying the color solution to pH 4.5, gives results that are accurate to 0.1 p.p.m. aluminium.—William D. Hatfield, *Ind. & Eng. Chemistry*, 16:233, (Mar.) 1924. A. W. B.

✤

Chemistry and Comfort.—The first of a series of investigations to determine how the comfort of shoes is affected by differences in chemical composition of leathers used in their manufacture, indicates that shoes made from vegetable-tanned calf leather hold their shape better and are more comfortable to wear than shoes made from chrome calf leather. Due to the higher contents of protein and sulfuric acid in chrome leather, it absorbs water to a greater extent than vegetable leather, increasing in volume and area correspondingly.—John Arthur Wilson and Albert F. Gallun, Jr., *Ind. & Eng. Chemistry*, 16:268, (Mar.) 1924. A. W. B.

✤

The Natural Water Corrosion of Steel in Contact with Copper.—Experiments show that the total iron corrosion is the same with bare steel plates as with steel specimens of the same size having 75 per cent of their surface copper plated. The total corrosion observed is determined by the total effective surface available for the depolarization of hydrogen by dissolved oxygen, the actual corrosion occurring on the steel alone. The results are not readily explainable by colloidal theories of corrosion, but the electrolytic theory explains them by picturing the corrosion per unit area of steel as caused by the depolarization of a film of nascent hydrogen. The film is deposited on the steel and adjacent copper surface and its removal is effected by diffusion of dissolved oxygen into the metal. Corrosion is limited by the rate at which oxygen can diffuse in to react with the surface film of nascent hydrogen. —W. G. Whitman and R. P. Russell, *Ind. & Eng. Chemistry*, 16:276, (Mar.) 1924. A. W. B.

✤

Colon-Aerogenes Differentiation at Cincinnati.—Laboratory procedure used in differentiating B. coli, B. aerogenes, B. cloacae and another group classed as atypical. "Correlation of rainfall and high river stages with relative abundance of coli and aerogenes was not apparent, nor did the degree to which the water was purified have any bearing upon the incidence of these two subgroups."—Clarence Bahlman and Henry Sohn, *J. A. W. W. A.*, 11:416, (Mar.) 1924. A. W. B.

✤

Recarbonization of Softened Water.—At Defiance, Ohio, the following method of carbonating the water is used: Coke, sometimes mixed with limestone, which is burned in a retort, gives off CO_2. The generated gas is mixed with air and conveyed to a scrubber, from which it goes to a drier and then the carbonating chamber. Admixture of air and CO_2 is distributed through the water by filtros plate. CO_2 in the water converts insoluble calcium carbonate to soluble calcium bicarbonate and calcium hydrate is also converted to calcium bicarbonate. Insoluble magnesium hydrate is converted into soluble magnesium bicarbonate. Amount of CO_2 gas applied is regulated by hourly tests on water leaving carbonating chamber. The added cost of carbon dioxide treatment does not exceed $1.88 per million gallons. —Nicholas S. Hill, Jr., *J. A. W. W. A.*, 11:393, (Mar.) 1924. A. W. B.

✤

Separate Sludge-Digestion Sewage Plant.—One-story sludge separating tanks and sprinkling filters clarify and oxide the sewage

of Lincoln, Neb., and four adjoining towns, so it can be turned into Salt Creek without secondary sedimentation. There are six separating tanks and six sludge-digesting tanks, each 27'x28' with 14 feet depth of vertical walls and 45 degree hopper bottoms. Four sprinkling filter beds have a total area of 2.6 acres.—L. R. Howson and H. P. Letton, *Eng. News-Rec.*, 92:602, (April 10) 1924. A. W. B.

✤

Sanitation—Its Relation to Health and Life.—"Sanitation is the art of securing and maintaining a clean environment for the protection and promotion of health and comfort." Environmental complements to health, nuisances and annoyances, public health, public nuisances, sanitation and public sanitation, administration of sanitation, administrative relationship, and life, are presented in this article. Greater cooperation between the medical health officer and the sanitary engineer is urged.—George C. Whipple, *Proceedings Am. Soc. Civil Eng.*, 50:490, (April) 1924. A. W. B.

✤

The Design of Swimming Pools as to Operation and Sanitation.—About 90 per cent of the area of a large public pool should have a depth of 5 feet or less. An area of about 10 to 15 feet of deep water across one end of the pool should be ample. Protection of the pool by draining runways away from scum gutters, and keeping spectators from runways is recommended. Filtration, sterilization, removing deposits from tank, dilution of pool water, toilets, shower baths, bathing suits and towels are discussed. For increased attendance adequate parking space is important.—Jack J. Hinman, Jr., *Am. City*, 30:353, (April) 1924. A. W. B.

✤

How Should Water Taste?—Although the palatability of a water is largely a matter of individual tastes, there are objectionable tastes caused by: chemicals as iron, chlorine or an alkali; decaying vegetation; microscopical organisms; pollution by trade wastes, and other sources. Where supplies have trouble with sodium compounds the removal of which is expensive, a new supply or the use of rain water for drinking, cooking, etc., is recommended. Copper sulphate and chlorine properly used are very effective in controlling organisms in reservoirs.—John R. Baylis, *Am. City*, 30:365, (April) 1924. A. W. B.

Water Meters in Philadelphia.—There are about 114,000 metered services in Philadelphia, 11,881 being placed in 1923. Meters are owned by householders and repairs are made by water bureau at expense of owner.—*Am. City*, 30:372, (April) 1924. A. W. B.

✤

A System of Catch-Basins for Richmond, Indiana.—Catch basins made of concrete contain metal cans for catching refuse and dirt. Cleaning is effected by lifting the cans with an ordinary hoist such as those used by automobile repairmen, and dumping contents into the truck or a trailer. Average cost for complete basin is $60.22.—D. B. Davis, *Am. City*, 30:371, (April) 1924. A. W. B.

✤

The Design and Operation of Sewage Pumping-Stations.—In designing small sewage pumping stations care should be exercised in determining the capacity of the proposed station, pay special attention to sanitary features of the plant, bear in mind the difference between pumping clear water and sewage. "For flows under 500 gallons per minute no class of equipment is as satisfacotry as the pneumatic sewage ejector," "for flows over 500 gallons per minute the Wood Trash Pump offers the best solution of the problem."—C. S. Timanus, *Am. City*, 30:390, (April) 1924. A. W. B.

✤

How Should Hydrant Rentals be Charged in a Municipal Plant?—Discussion on equitable payment for fire service, based on issue of whether consumers shall bear the burden by increased water rates or whether property shall be assessed in proportion to value received.—W. C. Brockway, *Am. City*, 30:397, (April) 1924. A. W. B.

✤

Comparative Study of Imhoff Tanks.—The plants selected for comparison were those of Schenectady, N. Y., and Plainfield, N. J., which have given trouble and unsatisfactory results; and those at Fitchburg, Mass., and the Irondequoit plant at Rochester, N. Y., which have proven most satisfactory. The purpose of the upper or sedimentation compartment of an Imhoff tank is to secure sedimentation of suspended solids; that of the lower compartment to convert these into inoffensive, relatively stable matter. Biological action and various capacities are discussed.—Harrison P. Eddy, *Pub. Works*, 55:75, (Mar.) 1924. A. W. B.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASES

DRS. E. R. HAYHURST and N. C. DYSART

Health Confessions of Business Women by Business Women.—This 265 page official bulletin has been issued for three reasons: the fact that it is difficult for a business girl to maintain her health, happiness and efficiency; the fact that many fail to do so; and the conviction that it is business girls themselves who are best qualified to give instruction on the management of their lives. The material is based on responses received from over 200 business women, and these edited by another business woman. The first chapter considers the philosophy of health, the inter-relation of physical and mental health, and the need of individual "stock taking." Chapter II, the psychological factors in health, to which considerable space is given; Chapter III, physical health, to which some 44 pages are devoted; Chapter IV, the board and lodging question; Chapter V, working conditions; Chapter VI, personal maintenance and hygiene, covering about 40 pages; and Chapter VII, a valuable treatise on the technique of life. Four appendices cover self-examination, time accounting, food values, and three prize letters.—Division of Industrial Hygiene, *Provincial Board of Health of Ontario*, December, 1923.

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Judicial Decision on Paint Spraying Machines.—A statute prohibiting the use of paint-spraying machines was held invalid by the Minnesota U. S. District Court, as unreasonable, purely arbitrary, and not a valid exercise of the police power of the state. "The evidence shows that at one time the use of such machines was thought to be deleterious to health, on account of certain ingredients contained in the paint. But the evidence further shows that these ingredients are not found in the paint used at present, and furthermore the evidence shows that the state itself makes use, upon its own work, of these same paint-spraying machines inside buildings. Under these circumstances I am of opinion that the prohibition of the use of such machines is not a valid exercise of the police power." The plaintiff also contended that the statute was void because of indefiniteness and uncertainty. The alleged uncertainty rests in the words "rain, heat, cold, snow, or other inclement weather." In U. S. v. Brewer, 139 U. S. 278, 11 Sup. Ct. 538, the court, in passing upon the construction to be given criminal statutes relating to elections, said: "Laws which create crime ought to be so explicit that all men subject to their penalties may know what acts it is their duty to avoid." Cases were then cited in which the application of this principle had resulted in certain laws being declared invalid, and the court continued: "The words 'rain and snow' are hardly definite enough in a criminal statute. The words 'heat and cold' are so elastic in their meaning as to cover the whole range of temperature. The words 'inclement weather' are equally indefinite. What is meant by 'inclement weather'? Will a fog or mist come within the language? Will wind be included? It is surely necessary that limitations shall be placed upon all of these terms. But who is to supply the limitations, the employer or the employee or the court or the jury? The legislature is the only proper authority to define a statutory crime against the state. This power can not be delegated to individuals, courts, or juries. The uncertainty and indefiniteness in the present statute is in my judgment as great as was found to exist in the statutes considered in the cases above cited." A permanent injunction against the enforcement of the law was therefor directed to be prepared (page 230).—Decisions of Courts and Opinions Affecting Labor, 1922, *U. S. Bur. of Labor Statis., Bull.* 344, (Sept.) 1923.

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Poisoning from Dipping Hand in Poisonous Solution not Compensable in New York.—Hilda Jeffreyes was employed by the defendant company, a photographer, to develop photographic plates. It was necessary in doing this work to dip plates, held in her left hand, into a poisonous chemical solution more than 500 times each day. She did this work continuously for more than a week when her fingers became red and swollen. She went to a physician, who gave her treatment. Later the end of the little finger of her left hand became mummified, gangrene set in, which made nt necessary to amputate the finger, and this was done. The pathological cause of her injuries was the contraction of the blood vessels of her finger

through the gradual action of the chemical solution. Claim was made under the workmen's compensation law and an award was granted by the State Industrial Board. The employer and the insurer appealed to the appellate division of the supreme court, where the award was reversed and the claim dismissed by a court divided three to two. Judge H. T. Kellogg (Supreme Court of New York, Appellate Division) delivered the opinion of the majority of the court, in which he held that the injury was not due to an accident and therefore not compensable. The opinion is in part as follows: "In my opinion there was no accident involved for two reasons: First, the contact made by claimant between her hand and the solution was voluntary and intentional. The coming into contact of the hand and the solution was expected, and therefore not accidental. Secondly, the injuries resulted from no occurrence which is referable to any particular moment of time which is definitive. The word 'accident' is derived from the Latin verb 'accidere,' signifying 'fall upon, befall, happen, chance' (Century Dictionary), and denotes an event which occurs upon the instant, rather than something which continues, progresses, or develops. 'The accident must be something which is capable of being assigned to a particular date.'" (Pages 279-280.)

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Utah Compensates for Tuberculosis, Reawakened by Inhaling Gas.—Clarence Snyder, a carpenter, was directed to change a bulkhead in a flue carrying fumes from a roaster in which ores were reduced. A half-hour later he became ill with severe nausea, but he continued to work for three days, during which time he continued coughing and kept getting worse. Some months before he had had a light spell of the "flu" which kept him from work for about a month. The company's medical witness testified that before the injury complained of, Snyder was suffering from tuberculosis of the lungs, and that the alleged accident "had little or nothing to do with the injury of which he complained." He admitted, however, possible aggravation of the disease, "but that it was by no means the starting point." The company contended that in any case the injury was not the result of an accident within the meaning of the compensation statute. Among other things Judge Thurman, Supreme Court of Utah, who delivered the opinion of the court, quoted Carroll v. Ind. Com., 69 Colo., 73, 195 Pac. 1097 (see Bull. No. 309, p. 295), from 25 Harvard Law Review, 340: "Since the case of Fenton v. Thorley, nothing more is required than that the harm that the plaintiff has sustained shall be unexpected. * * * It is enough that the causes, themselves known and usual, should produce a result which on a particular occasion is neither designed nor expected. The test as to whether an injury is unexpected, and so, if received on a single occasion, occurs 'by accident,' is that the sufferer did not intend or expect that injury would on that particular occasion result from what he was doing." Concluding, the court said: "It is not necessary to prolong the discussion. Being convinced, as I am, that Clarence Snyder, the employee in this case, on the 17th day of January, 1921, at a definite time and place, while in the course of his employment, received an injury by inhaling gas, wholly unexpected by him, and that such injury aggravated and accelerated a preëxisting disease and rendered him wholly unable to thereafter continue his usual employment, I am of the opinion that the findings, conclusions, and award of the defendant commission should be affirmed, with interest on payments past due, at plaintiff's costs." (Pages 355-357).

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Kansas Compensates Death Due to Drinking Ice Water While in Heated Condition.—An employee of a zinc company, on a warm day, was employed at shoveling hot cinders into a cart and removing them to a dump nearby. The place where the cinders were loaded was in full glare of the sun. But there was a drinking fountain within the furnace building where employees could get ice-cold water. About two o'clock in the afternoon the employee went into the furnace building for water. He became sick two hours later. He climbed upon his cart but fell off. On a second attempt to drive the cart he fell backwards upon the cinders unconscious and so remained until his death, which occurred an hour later. Medical aid was secured thirty minutes before he died. The company doctor was of the opinion that death was due to shock from taking cold water into an overheated system. An award of compensation was made in favor of the widow and children upon the ground that the deceased "died from an accident arising out of and in the course of his employment." The company challenged the correctness of this award and the case was taken to the State

Supreme Court. Judge Dawson, speaking for that court in affirming the award, said: "Here there was the added factor of the overheating, traceable to the workman's task of shoveling warm ashes on that unusually warm afternoon, and this brought about the condition which gave such sudden and fatal effect to the drinking of the ice water. This justified the trial court's conclusion that within the scope and intent of the workmen's compensation act the plaintiff's husband's death was caused by an injury arising out of his employment as well as in the course of it." (Page 361.)

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Health as a Purchasable Commodity (in industry).—The author quotes Fisk's "Health Building and Life Extension" to the effect that man has not improved physically during the historical period of 100 centuries. There is plenty of evidence that other animals have shown wonderful development in health and disease but man is at a standstill, if not retrogressing. The general opinion has been that a man's health is purely a personal matter. However, an employee's health must not become a menace either to his fellow workmen or to production. It is no more right or efficient to discharge a man who is slipping in his work because of ill health than it is to scrap a good machine that merely needs repairs. Many employment men hesitate about hiring a man with one eye, yet, because they cannot see the heart or mind, will hire a crane operator who is a menace to himself and others. They turn down a man with two fingers missing and hire one with tuberculosis who cannot do a day's work. There are more men applying for work whose eyes are apparently all right and yet who are practically blind in one eye than there are men whose eye defects are noticeable. During the past 150 years, we have increased the life expectancy 20 years, but this has occurred through conserving childhood life. We have not increased life expectancy for the man of 40. In 1922, about 500,000 workers died. It is probable that at least half of them died from failure to use scientific knowledge to prolong life. Of sick workers in industry, three-fourths of them lose time and the rest do not. This means that in a plant employing 1,000 men there is an average sick list of 75; of these 57 are absent from work, and the remaining 18 are depleting their vitality by staying on the job when they should be at home or in the hospital. Chronic infection is the greatest barrier to life extension. Self-prescribing of drugs is another waste that affects the worker directly and industry indirectly. Good treatment is economy and self-medication is seldom good treatment. The old time "company doc" who saw only those who came in to see him must go. He made no attempt to sell health to the employees and it never occurred to him that he could do something in a preventive way. With such men as Shoudy, Quinby, Barr, Mock, Farnum, Geier and a host of others entering the field, industrial medicine and surgery became a reality. They advanced the idea that men off the job were not producing and that it was the doctor's job to reduce absenteeism on account of sickness to a minimum. This has been accomplished. In one plant sickness was reduced from nine days per man per year to thirteen hours per man per year. The large employer should employ a good industrial physician who is intensely human and who can talk shop. Pay him a salary commensurate with his earning capacity and make him accountable. Also give him coöperation and follow his advice. Probably the best plan for the small employer is to interest some local physician or group of physicians in the health problem of his plant. It may even be necessary, unfortunately, to have to sell the idea to a physician. You may have to import him. Industrial health is purchasable. Within natural limitations, any industry can control its sickness rate and vital capacity.—C. F. N. Schram, Fairbanks-Morse & Company, *National Safety News*, 9, No. 2: 33, (Feb.) 1924.

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Activities of the National Safety Council.—This is a body of men determined to prevent accidents. The members are employers in every industry—including workshops, public utilities and mines; schools and colleges; government officials and other individuals interested in industrial and public safety. The National Safety Council is a service association—not for profit. It is a means of exchanging and pooling information upon practical safety methods. Over one and one-half million dollars have been spent in accumulating every scrap of accident-prevention experience, and the Council has printed and distributed over 3,000 different pictorial bulletins visualizing the causes of accidents. The monthly magazine, the Annual Congress Proceedings, the specialized pamphlets—are all sent auto-

matically to members, and are summaries of the experiences and information contributed by all for all. The 4,000 members (employing 6,000,000 workers) elect Directors; the Directors elect an Executive Committee, and the Executive Committee elects the unpaid and paid officers. Over 1,000 persons serve on the unpaid committees. The officers and Executive Committee have met monthly for more than ten years to determine the policies of the Association. Many thousands of dollars are contributed through the time and traveling expenses of these committees not shown in the Treasurer's Annual Report. The headquarters' staff consists of forty-four persons, including technicians of high standing, who carry out the policies laid down by the governing committees. The membership is subdivided into twenty sections (such as Metals, Woodworking, Steam Railroad, Mining, Construction, etc.), and the sectional activities are directed by voluntary officers and committeemen. Local branches intensify the propaganda in forty leading cities.—168 N. Michigan Ave., Chicago.

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The Gas Mask at Sea.—Seamen should have at hand some protection against gases, smoke or fumes which may be met with on shipboard. Harmful gases may result from fires, from incomplete combustion of fuel and from accidents to various commodities which make up the cargo. After fumigation gases may remain and be a source of danger in any closed space. Empty gasoline or oil tanks, even after steaming, may give off dangerous fumes. The Chemical Warfare Service has originated the so-called "All-Purpose" mask which protects against gases ordinarily met with, hopcalite being employed as protection against CO, and cobaltous chloride as NH_4 absorbent. The "All-Service" mask is manufactured commercially and is similar in construction and in operation to the "All-Purpose" mask. The U. S. Bureau of Mines designed the "Universal" mask which also protects against all noxious gases met with in ordinary industrial, chemical and metallurgical practice. When the atmosphere is deficient in oxygen the gas mask is of course no protection. In such cases an oxygen apparatus or hose mask should be used. The canister of the "All-Purpose" mask has a life of 4 to 6 hours continuous use. —L. M. McBride, *National Safety News*, 8, No. 5; 27, (Nov.) 1923.

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Small Plant Health Service.—A plan of health service practicable for small plants is outlined by the author. A part-time physician should be employed and he should have definite hours of attendance at the plant. A full-time nurse is usually necessary. Where two or more small plants are located not far apart, a coöperative dispensary and equipment with necessary personnel may be maintained. The program should not only consist of the treatment of sickness and injuries but should also include constructive health work. Selected employees may be trained in first aid, especially where there is a night shift with no medical attendants, but a trained nurse is more desirable to take care of persons coming to the dispensary. In one plant depending upon an incompetent attendant 18 per cent of all compensation cases were infections. The dispensary should consist of at least two rooms, should be located in a quiet part of the plant and be furnished with toilet facilities. The article is replete with suggestions and instructions as to the organization, equipment and operation of small plant health service. Reprints of the article, which is No. 57 of a series of Safe Practices Pamphlets, are obtainable from the headquarters of the National Safety Council in Chicago.—J. N. Sandel, *National Safety News*, 8, No. 5; 43, (Nov.) 1923.

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Trend of Child Labor in New York State.—In spite of a large growth of population the percentage of children of 14 and 15 years employed for wages in New York State was reduced from 20 per cent in 1910 to 14 per cent in 1920. In New York City the percentage was lowered from 23 per cent in 1910 to 18 per cent in 1920. In New York State the per cent of children 14 and 15 years of age attending school increased from 78.7 in 1910 to 81.5 in 1920, while in New York City 75.5 per cent attended school in 1910 and 78.1 per cent in 1920. This increase in school attendance has been practically limited to high schools and has been attributed to the operation of the continuation school law. In Rochester 17 per cent of the children are gainfully employed and in Buffalo 15 per cent.—*Special Bull.* No. 122, N. Y. Dept. of Labor, (Dec.) 1923.

CHILD HYGIENE

TALIAFERRO CLARK, M.D.

Results of the Operation for Enlarged Tonsils and Adenoids.—In spite of the beneficial results of the removal of enlarged tonsils and adenoids, the criticism still frequently appears in the lay press that the operation is done too frequently among school children.

Again it is objected from the medical side that the tonsils are a part of the defensive mechanism of the respiratory and digestive tracts against infection. It is also suggested that they have an endocrine function, although experiments prove that the tonsils have no peculiar internal secretion.

With the object of determining what is the average result following this operation in a series of unselected cases, a series of operations done at school clinics were followed up and reëxamined at the end of the year. The operation always took place within a few weeks after the examination. The total number of cases dealt with was about 600.

Certain data indicating the child's health before the operation was carefully collected. A circular letter was sent to the teachers with the following four questions to be answered:

1. Has the child's attendance been regular?
2. Is the child retarded in school work?
3. Do you find the child deaf?
4. Is the child dull, normal or bright?

One letter was sent at the time of the first examination and a second letter a year later. As a rule the first and second reports were filled in by different class teachers who had no sort of indication as to whether the pupil reported on had been subjected to operation or not.

The results of the various investigations were as follows:

Mental Condition. Complete reports furnished by the teachers of 666 children showed:

1. A reduction of 32 per cent in the number of children whose attendance was irregular.
2. A reduction of 34 per cent in a number of those who were retarded in school work.
3. A reduction of 45 per cent of those appearing deaf to the teacher.
4. A reduction of 23 per cent in the number of those classified as dull.

It is significant to note in 600 cases with complete records only 4 per cent were said to be not improved under the headings coughs and colds, breathing, and general health, while in those cases (50 per cent of the whole) whose hearing was impaired, only 3 per cent was said to be unchanged. In other words 96 per cent of the total changed for the better.

Weight and Height. The average increase for weight and height in both sexes was satisfactory as compared with an accepted standard.

Malnutrition. The number of malnourished children is reduced in every age group. The percentage of reduction in the boys is 44 and in the girls 41. Whether the average increases in weight and height are considered, or whether malnutrition was used as an index, the results point to the conclusion that this operation is followed by striking and great benefit to the general health and physique—quite apart from the relief which the treatment affords to more local symptoms. The results show that the operation removes a handicap to the development of the child and helps in a definite way to advance the aim of preventive medicine, which is not only to abolish the more serious diseases and to postpone death, but also to enable each individual to be free from even minor disabilities, to be so strong and vigorous as to reach the maximum efficiency during life, and to obtain the most out of life.—An Investigation of the Results of the Operation for Enlarged Tonsils and Adenoids, J. Keen, *The Medical Officer*, (February 23) 1924.

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Variations in the Compensation of Mother's Milk.—Little can be done to alter the character of the milk by dieting a well fed mother. A review of the variations in chemical composition during the first eleven days shows:

1. For each constituent there is a production plane and this plane is fixed for the individual, independent of nutrition, and is dependent on the individual.

2. Little can be done to alter the proportions of the constituents by feeding.

3. An increase or decrease in lactose is accompanied by a change in the opposite direction in percentage of fat and protein.

4. Protein mechanism is best regulated and less dependent on factors controlling fat and lactose than they are on each other.

Of the drugs which appear in milk may be mentioned saline cathartics, arsenic, salicylates, belladonna in full quantities, opium, iodides, bromides, and mercury after prolonged use.

With regard to the quality of the milk and the possibility of altering it, it must be considered—

(a) That the main factor is the inherited nursing capacity of the mother and her individual type of milk.

(b) That, within limits, she draws on her own body tissues for the sake of the child and even if underfed for a time produces a fair supply.

(c) A normal quantity is only increased by administering a properly balanced diet of sufficient quantity if she is underfed. In overfeeding with underexercise her health suffers as also the quality of the milk.

(d) The latter part of the feed is richest in fat, therefore, for a time the diet may be increased or limited in fat by totally exhausting the breasts or feeding light on the two breasts rather than emptying one fully.

(e) That a longer interval between feedings gives a lower fat content.

(f) The administration of fats such as cod liver oil, etc., for a time increases the fat content of the milk which, however, fairly soon settles down to the mother's normal.

(g) The supply in quantity depends to a certain extent on the demand. If the breasts are well emptied the supply keeps up. If the demand is lessened the quantity diminishes.—Breast-Milk Feeding. Catherine Chisholm, *The Lancet*, (March 1) 1924.

Nearsightedness.—Myopia as a cause of blindness is shown as follows:

63 cases in a series of 1,036 blind children (Board of Education)	6.08%
54 cases in a series of 1,855 blind children (Harman)	2.91%
17 cases in a series of 477 blind adult workers	3.56%
84 cases in a series of 601 blind persons of all ages (Harman)...	13.98%

The degree of myopia in 1,181 cases of myopia of a degree sufficient to necessitate in special classes was

5-10 dioptres	509
10-15 dioptres	592
15 and over.....	80
	1,181

It is convenient to classify myopia as "school" myopia and "pernicious" myopia. the former is ordinarily low in degree and not progressive beyond certain extent. It is also but rarely associated with ocular changes. "The fact that ophthalmic surgeons recognize a school myopia is the strongest argument for its prevention by the provision of all those measures which are summed up in the term 'school hygiene': such as good lighting in class rooms, good print in books, regulated needlework, a maximum of oral instruction, and, above all, the early correction of errors of refraction and the special supervision of those who show signs of being or becoming short-sighted."

Pernicious myopia figures largely in tables of blindness and partial blindness, commences at an early age, is likely to progress rapidly, and is very liable to be associated with serious intraocular disease. This form of nearsightedness necessitates the provision of special measures for the education of those so afflicted. This should be so conducted as to prevent the continued development of the disease in the children affected, and requires the complete elimination of any form of eye strain such as involved in close work, and the provision of educational facilities under the best hygienic condition. Every effort should be made to discover these cases among children of preschool age, and teachers and parents should be encouraged to report suspected cases.

Of the estimated 6,000 blind and partial blind children in England and Wales approximately 3,300 were partially blind; and of 1,292 partially blind children enrolled in special classes, 836 were nearsighted.

It is essential to adapt the career to the disability. Unsuitable occupations inevitably lead to inefficiency and breakdown. Of 480 cases investigated by Mr. Bishop Harman, 38 per cent were engaged in close work and

62 per cent were ordinary patients not occupied in habitual close work. No less than 53 per cent of the close workers failed at some time during their career, and of these 15 per cent sustained permanent damage through the loss of an eye. In the other group, failure comprised only 9.4 per cent and but 7 per cent sustained damage to the eye. These latter were very high myopes.—Causes and Prevention of Blindness, *Report of Departmental Committee of the British Ministry of Health*, 1922.

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Dental Caries.—The pediatrician should share responsibility with the dentist in preventing malocclusion, decay, and infection in teeth of children. Furthermore, the physician, if properly informed with regard to the normal and abnormal development of teeth, and will include observation of the condition of the teeth and emphasize the importance of their care in every routine examination of a child, much disease and decay will be avoided.

Caries of the teeth is most prevalent in infancy, childhood and adolescence, and it is in these periods that prevention must be practiced. In infancy, prevention consists largely in attention to nutrition and supplying the elements necessary for building dental structure. Frequent and systematic observation and cleaning of the teeth from the time of their eruption are essential. Malocclusion from whatever cause should be guarded against. If irregularity of the maxillary denture appears, daily pressure should be employed to correct this deformity. The control of the nutrition and diet of the mother during pregnancy is important.

In childhood and adolescence the prevention of caries largely depends on keeping the teeth clean and preventing general infections. Teeth often decay rapidly during and after febrile diseases, due to the fact that during illness the teeth are not so likely to be kept clean, and that elevation of temperature causes any residual food on the teeth to decay more quickly and form a nucleus for beginning caries. Also, the diet is as important during childhood and adolescence as during infancy, for the permanent teeth are being formed at the same time as the temporary ones are being maintained. Normally, no deciduous tooth should be extracted until the corresponding tooth is ready to take its place—that is, when the dental arch is large enough to support the permanent tooth in correct occlusion. Cavities should be filled when they are small. Any deciduous tooth which is not devitalized can and should be filled. In general, all devitalized teeth should be removed immediately. Since the pulps of deciduous teeth are larger in proportion to the size of the teeth than are those of the permanent teeth, and the wall of dentin is thinner, slight decay is dangerous. For this reason, a roentgen-ray examination of carious teeth is often necessary, if the proper treatment is to be carried out.

Broken off incisors are common in childhood. In case of broken deciduous teeth, decay should be arrested if possible and the teeth kept in place until time for the permanent teeth to erupt. Decay, if it occurs in the permanent teeth, should also be arrested. "If the pulp is uninjured the teeth can be built up after they have grown to be large enough so that lateral pegging can be done without injury to the pulp cavity. This can usually be accomplished about four or five years after the eruption of the tooth, or at the approach of puberty." When the pulp of a broken off permanent tooth is injured, it will have to be removed.

The importance of the six-year molars should be emphasized. They are the key stones of normal occlusion in the mouth and as such their preservation is essential. They often present deep incisuras, when first erupting, which retain food easily, and early decay along these crevices in the crown is common. These may be treated with soft prophylactic fillings even though decay has not begun, and when the teeth are full-size and completely erupted these fillings may be removed or allowed to wear themselves out. In this way, a permanent tooth, which is more subject to decay, will be saved, and the time of most prevalent decay will be safely passed.—"Teeth in Childhood," Donald C. Mebane, *Amer. Jour. of Diseases of Children*, (March) 1924.

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A Year's Accomplishment in Rural Child Health Supervision.—In the beginning of the year 1912 there was but one county health department organized and functioning in the

State of North Carolina with a qualified physician devoting his full time to the protection and promotion of public health. Twelve years later there were thirty-one county departments of health in operation with two additional ones authorized. The State Board of Health contributes towards the maintenance of twenty-eight of these county departments of health.

Last year more than 6,000 children under one year of age died in these twenty-eight districts and in addition there were 4,000 stillbirths. In the attempt to remedy this condition, the health departments had registered 2,123 prenatal cases for special instruction and 5,854 babies for special instruction of the mother on infant care; 33,344 home conferences with mothers were held either by the health officer or nurse in relation to the facts they should know regarding pregnancy, labor, the puerperal state, and the care of the baby; 1,999 similar conferences were held in the offices of the departments with mothers calling for information; 1,577 additional mothers were given similar advice and instruction in group conferences. In addition 200 women completed the American Red Cross course of instruction on Home Hygiene and Care of the Sick, 629 completed a standard course of instruction to midwives, and 626 girls completed a standard course of instruction in the care of babies and young children and received certificates of membership in the Little Mother's League.

A total of 56,602 school children were examined by teachers in accordance with the State law relating thereto followed by a preliminary inspection by the health officer or the nurse for the purpose of segregating for final diagnosis children suspected of having remediable defects other than dental conditions. A total of 25,123 children were examined by the health officer and found to have remediable defects other than dental conditions.

The followup of the examinations showed 2,055 operations for diseased tonsils and adenoids; 18,575 children treated for dental defects; 1,280 children fitted with glasses; 38 orthopedic corrections; and 77 nutritional corrections. In addition 1,652 children were excluded on account of communicable infections.—*Health Bulletin North Carolina State Board of Health*, (April) 1924.

Tuberculosis in Infancy.—The older conception of tuberculosis in infancy as a more or less hopeless condition is gradually changing, and studies made by Hempelmann, Dunn and Cohen, and others have shown that tuberculosis in infants is not so invariably fatal as had previously been considered. The present survey was undertaken to throw additional light on this point.

The material for study was obtained from the wards and from the Chest Clinic records of the Hospital for Sick Children, Toronto. Within the last year approximately 2,300 von Pirquet and intracutaneous tuberculin skin tests have been made on admission to the infant wards, with 68 positive reactions in children under 2 years of age. It was not possible to follow up 15 of these cases and 8 were under observation for a period less than six months. Of the 45 cases remaining, 20 have died as follows:

Age on diagnosis	No. of cases	Deaths	Mortality	
0- 6 months	9	6	66%	70%
6-12 months	11	8	73%	
12-18 months	21	6	29%	24%
18-24 months	4	0	0	
	45	20		44%

The mortality in this series in the first year is 70 per cent, in the second year it is only 24 per cent, and the combined mortality is 44 per cent.

The surviving cases have been under observation for varying length of time as follows:

Age at diagnosis	6-12 mos.	12-18 mos.	18-24 mos.	2-3 yrs.	Over 3 yrs.
0- 6 months	1	1	1		
6-12 months		2		1	
12-18 months	5	6	2	1	1
18-24 months	1			1	2
	7	9	3	3	3

The number of cases, though not large, gives a fair idea of their trend. They show tuberculous infection as evidenced by positive skin tests, because the study is not limited to cases showing symptoms of tuberculosis. This study indicates that tuberculous infection in infants under 2 years is not the virulent disease that it was previously considered. Under one year of age it is still a very severe infection with the chances against recovery.

From the standpoint of prophylaxis, it must be noted that of the 20 infants under one year of age, who were infected, 14 died.

Without this tuberculous infection most of these children would still be living.

It is important in prevention to know the source of infection. In 77 per cent of 56 cases with definite information on this point there was a history of exposure to a case of tuberculosis. In 17 cases the mother was the source, in 15 the father, and in 11 a brother, sister, aunt or someone in frequent contact with the infant. If it is possible to reduce contact there is absolutely no question that infection can be reduced, and infantile deaths from tuberculosis checked. Either the patient or the infant must leave home. The most serious problem in this connection arises when the mother herself is the source of infection. Where the diagnosis is doubtful, as frequently occurs, the infant should be given the benefit of the doubt and removed from the questionable environment.—Tuberculosis in Infancy. Its Prognosis and Prevention, G. Albert Davis, *Archives of Pediatrics*, (March) 1924.

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The Prognosis of Tuberculosis in Early Infancy.—The statistics of Langer include 140 infants who had been recognized as infected with tuberculosis before the age of ten months. This limit of ten months had been selected because, having been given a longer incubation period, one could expect that the infection contracted in the course of the first year would manifest itself at times only about the age of ten months. The children surviving were under supervision at least to the fourth year, certain of them up to the tenth year. Sixty per cent of them died. A third of the infants infected in infancy survived. Among the 56 survivors, 50 experienced a period of perfectly latent infection; one can see that the first infection was overcome.

Are there factors that may be utilized to increase resistance to infection? It does not seem at first sight that heredity plays a part. Among the 56 infants surviving 20 were of tuberculous parents, 26 of nontuberculous parents, and for 10 precise information was wanting. There is a striking difference between these two categories; the acute, miliary, and meningeal forms were much more frequent among children born of healthy parents (36 out of 45) than among those of tuberculous parents (9 out of 35). These latter had, on the contrary, the chronic lesions of caseous pneumonia. There is then among them a certain immunity or at least a special resistance.

Twenty infants of gravely infected parents were separated from them a short time after infection,—either because the parents died, or the children were raised in a better home environment—all survived. On the contrary, those who died generally continued to live with their parents and were in consequence exposed to a superinfection. This is extremely dangerous to children already infected and should be avoided.—*Bulle. International de la Protection de l'Enfance.* (February 29) 1924.

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Birthweight and Birthlength.—The question of how far the development of the foetus can be affected by maternal nutrition has been the subject of much inquiry. The result of experiments upon animals by a number of observers are conflicting. The possibility of reducing the weight of the child, by strict dieting of the mother, so as to produce a very small fullterm baby in case of contracted pelvis, has been questioned with apparently no decisive results.

An attempt was made to discover, by coordinating the carefully kept medical and social records of past years of two institutions, whether war conditions had an unfavorable effect upon the birthweight and length of the children of the primiparæ; and also if necessitous mothers, who probably had had insufficient nourishment, produced children inferior in development to those of mothers in more favorable circumstances.

These studies showed, as regards the hospital cases, that there was no significant falling off in weight for the war years, and even an apparent superiority in length.

The children of unmarried mothers, when maternal disease is excluded, do not appear inferior to the children of married primiparæ despite the mental strain and other hardships experienced by the majority of mothers under observation.

The height of the mother apparently has no effect on the length of the foetus. The correlation between maternal height and the baby's birthweight and length is of doubtful significance in the case of weight in either sex. The coefficient for maternal

height and baby's length seems significant in the case of male babies, but it is not very large.

With regard to the effects of the season of the year at which babies were born, it appears from the average occurring in each year that there is some slight falling off in weight in March and a slight rise in the autumn months.

In the case of 1,527 mothers, the correlation between maternal age and infants' weight was found to be entirely without significance.—The Effect of Maternal Social Conditions and Nutrition upon Birthweight and Birthlength. M. Bruse Murray, *Medical Research Council*, London, 1924.

✚

Serum Treatment of Scarlet Fever.—The identification of a specific type of Streptococcus hemolyticus by a number of observers and the recent reported production of antiscarlatinal serum, by Dochez, prepared by the immunization of a horse with the specific type of streptococcus have led to the study of the diagnostic and therapeutic value of such serum.

Clinical trial of an antiscarlatinal prepared by Dochez by the immunization of a horse with the streptococcus shows that this serum possesses the capacity to blanch completely and permanently the exanthem in a local area about the site of intracutaneous injection in patients with scarlet fever. That this is a specific property of the serum is indicated by the negative control tests with normal horse serum and with a polyvalent antistreptococcus horse serum.

Thirteen cases have been treated up to the present time in a therapeutic test of the serum—9 of them children and 4 adults. Two were mild cases, 5 were moderately severe, 3 were severely toxic, 2 were extremely toxic with almost hopeless prognosis, and 1 was a late septic case with a severe cervical adenitis, thrombophlebitis, and streptococcic septicemia.

The serum was administered within from 24 to 60 hours after the onset in all but the last case. In all but the last 3 cases a single intramuscular injection of from 40 to 60 c.c. of serum was followed by a permanent and complete recovery within from 12 to 24 hours. There was a critical fall of a temperature to normal within from 8 to 12 hours, a rapid and complete fading of the rash in from 12 to 15 hours with complete disappearance in from 12 to 24 hours, rapid improvement in the throat symptoms and permanent disappearance of all toxic manifestations in the severe cases.

In the 2 extreme toxic cases the administration of larger amounts of serum in divided doses was followed by rapid and striking improvement with complete recovery by 36 hours after the initial injection of serum.—Observations of the Treatment of Scarlet Fever with Scarlatinal Antistreptococcic Serum, Francis G. Blake, James D. Trask and John F. Lynch, *Jour. A. M. A.*, (March 1) 1924.

HEALTH EDUCATION AND PUBLICITY

E. G. ROUTZAHN

"A Six-Book Shelf on Publicity Methods."—As a public health worker you may or may not consider yourself a social worker, but your publicity problems are covered in discussions of publicity in social work.

"There are not six books, nor so far as I know, even two, which deal with publicity from the social worker's standpoint. In the books named below, however, the secretary will find some of the principles and technique which he needs to use discussed in terms of journalism, advertising, or public affairs, and he can make his own application of the material to problems of social work publicity.[1]

Newspaper Writing and Editing, by Willard G. Bleyer. Houghton Mifflin Co., Boston. Revised edition, 1923. 365 pp.

Effective Type-Use for Advertising, by Benjamin Sherbow. Benjamin Sherbow, Patchogue, N. Y., 1922. 139 pp.

A B C of Exhibit Planning, by E. G. and M. S. Routzahn. Russell Sage Foundation, New York, 1918. 216 pp.

Public Opinion, by Walter Lippman. Harcourt, Brace and Co., New York, 1922. 418 pp.

Public Speaking, by James A. Winans. Century Co., New York, 1921. 512 pp.

Advertising—Its Principles and Practice, by Tipper, Hollingworth, Hotchkiss and Parsons. Ronald Press, New York, 1921. 579 pp.

"If I were to choose three of these, I would select the first three on the list because these discuss in a practical way the technique of the three forms of publicity chiefly used by the social worker: news, printing, and exhibits. Bleyer's book on the newspaper tells the things that anyone who supplies news or writes articles for the daily press should know. Sherbow's book is very easy reading and gives a point of view toward the function of printing which, in itself, is something worth acquiring. Apart from any help it may give in planning exhibits, the first chapter of A B C of Exhibit Planning suggests a method of approach to any publicity project. The book also contains some reference material in convenient form on how to organize a campaign.

"But the other three are really needed too. I think the social worker who writes or speaks about his work should by all means read in Walter Lippman's Public Opinion, the analysis of the way in which people form their opinions, in the chapter called 'The Pictures in Our Heads.'

"Public Speaking is full of suggestions which anyone who has sat through many sessions of a state or national conference could heartily recommend to social workers. In so far as a book can help with this problem, Winans' book does it, but a brief course of training including practice in speaking is obviously much better.

"Advertising—Its Principles and Practice contains much practical material on planning campaigns, writing copy, and designing a page of type and pictures. It also contains a very good section on the psychology of advertising, from which the secretary may learn much about how to obtain attention, interest, good will, and response.

"If one more book were to be added to the list, I would suggest Effective Direct Advertising, by Robert E. Ramsay. (D. Appleton and Co., New York, 1922. 593 pp.) Indeed it may be found of more practical everyday use than Advertising—Its Principles and Practice. It is a good reference book in relation to all kinds of printed matter—engraving, letter writing and preparing and using mailing lists."—Mary Swain Routzahn, *The Family*, 6:35, (April), 1924.

✤

"Motion Pictures for Health."—The address of the chairman of the Motion Picture Luncheon of the Health Education and Publicity Section, American Public Health Association, at Boston, October 9, 1923. "Stressing the need for more and better films, and advocating the centralization of responsibilty for producing films of character and length."—James A. Tobey, *Nation's Health*, 6:252, (April 15), 1924.

1. Any or all of these books may be ordered through the American Public Health Association.

It works.—"The experience of practically all of the cities which have undertaken permanent safety campaigns shows that the first essential is a Safety Week campaign, the effect of which is twofold: first, to attract widespread attention to the permanent campaign; second, by a striking demonstration in the reduction of accidents during that one week, to convince the people that it is possible to prevent accidents and to convince them of this fact so strongly that they say: 'Why stop with a Safety Week? Let's have a safety campaign throughout the year.'

"This is evidenced by the experience of five cities which represent practically every condition found in any city in the United States. New York, the metropolis; Washington, the residence city; Pittsburgh, the great industrial center; Louisville and Baltimore, where traffic conditions are typical of a hundred American cities. In each of these cities a Safety Week campaign was conducted within the last year, with the following results:

ACCIDENTAL DEATHS

	Safety Week	Corresponding Week	Per Cent Reduction
New York	30	70	57
Washington	2	6	66
Pittsburgh	9	22	60
Baltimore	2	9	77
Louisville	1	3	66

"These campaigns have demonstrated that more can be done in one week's intensive effort to convince all of the people that accidents can be prevented and to give widespread publicity to the safety movement than can be accomplished in an entire year of ordinary effort. But an accident-prevention campaign which begins and ends with a Safety Week is worse than no campaign at all."—"Reducing Traffic Accidents Through Organized Community Effort," C. W. Price, *American City*, 30:377–381, (April), 1924. Illustrated.

✤

The Museum of Hygiene.—A tenement has been made over as a museum "primarily for the medical students of New York and Cornell Universities and for the public health nurses who are taking a course in public health given under the auspices of New York University and the State Health Department, but it will be a free reference museum accessible to any medical student, physician, nurse or lay person who finds the material within of value." Under the supervision of Dr. W. H. Park, the exhibits were planned and prepared by Stella Boothe, who has developed some new and effective ideas.—Stella Boothe, *Child Health*, 5:161, (April), 1924. Illustrated.

✤

A Word Picture of a Fact.—"The average New Yorker, entering a local hospital at 9 o'clock next Monday morning as a sick man, will be discharged at 6:27 P. M. on the second following Wednesday, according to a survey just completed by officials of the United State Hospital Fund. . . ." This is the way a dull fact was made good to read and easy to remember. To learn how "cheerful news is found in every department" see "Getting Publicity for Hospitals."—Carl H. Getz, *Better Times*, 100 Gold St., New York City, 5:18s, (April 7), 1924.

✤

The Tools and the Tool Case.—Is the equipment and arrangement of your desk so obviously easy that there seems to be no room for discussion, or is your desk a daily chess or checker problem? In either case you will be interested in "What Your Desk Needs."—Arthur Dunham, *Better Times*, 100 Gold St., New York City. 5:8s, (April 7), 1924.

✤

"A Home-Made Portable Stand for Projectors."—If you use a portable motion picture machine or stereopticon frequently in the same schools, you will wish to look up this article. Any manual training class can produce this inexpensive piece of furniture which will save you time and add much to the convenience in showing pictures or slides.—C. J. Primm, A.M., *Visual Education*, 806 West Washington Blvd., Chicago, 5:84, (March), 1924. 15 cents.

✤

Teaching Health by Means of Plays.—The best single source of information is the attractively illustrated and well printed pamphlet, "Dramatics for Health Teaching," by Harriet Wedgewood, U. S. Bureau of Education, Washington, D. C. Sold by Superintendent of Documents, Washington, 5 cents, and 2 cents for each additional copy.

Toronto June 25-July 2.—At this time and place many health workers will attend the annual session of the National Conference of Social Work. Health, Mental Hygiene and other division programs will offer much of value to public health workers. The Committee on Publicity Methods will conduct clinics and discussion sessions; will put on the prize play for adults; will have exhibits and other features helpful to the publicity worker in any field. For further information address the editor of this department.

✤

Have You Signed Up?—A fellow now registered with one of the highly technical sections of the American Public Health Association is considering a transfer to Health Education and Publicity. He argues that his major professional phase of public health work makes its greatest contribution in proportion to the educational use of its product. He and others are assured a cordial welcome. Fellows ready to transfer their registration should write to the secretary of their present section and to Miss Marjorie Delevan, State Department of Health, Lansing, Michigan, secretary of Health Education and Publicity Section. If you forget the address of your present Section secretary, address him in care of the American Public Health Association, 370 Seventh Avenue, New York City.

✤

Free United States Government Publications.—Most government publications are now sold by the Superintendent of Documents, Washington, D. C. At the same time the issuing department or bureau usually has a certain allotment for free distribution. Unless one knows that the free supply has been exhausted it is usually wise to write first to the office that issued a publication. Then, of course, senators and representatives have many publications for free distribution.

✤

More "Little Blue Books."—"Ask your husband and the doctor if the Baby's Birth is Registered and see that it is. IT SHOULD BE." In this simple, direct fashion, without a long list of reasons why, "How to Take Care of the Baby" emphasizes birth registration. You will wish to see "How to Take Care of the Children," "How to Take Care of the Mother" and others of the "Little Blue Book" series.—By Helen MacMurchy, M.D., Division of Child Welfare, Canadian Department of Health, Ottawa.

✤

Hospital Report Clinic.—The announcement of the intention of *Modern Hospital* to open a clinic for hospital reports brought a number of entries to the editor, and the clinic held its first session in the March, 1924, issue.

"The development of a clinic in which all of the various 'specialities' commonly represented in a hospital report shall be in charge of technical experts may prove necessary later on, but for the beginning of the clinic service, the editor has felt that the work should be limited to an appraisal of the general physical state of hospital reports and the efficiency with which they function."

Dr. Carl E. McCombs, of the New York Bureau of Municipal Research, director of the clinic, announces that in general, "the criteria upon which his conclusions have been based are embodied in the following questions:

"(1) Does the report have informational and educational value for the average citizen, and is it presented in such a way as to stimulate his interest and enlist his coöperation for community health?

"(2) Does the report present its financial statistics in such a way that the administrative officer or fiscal supervisor can demonstrate the adequacy of budget needs and the propriety of expenditures for all of the various phases of hospital service; and are such statistics comparable with those of other similar institutions?

"(3) Does the report furnish professional workers within and without the hospital staff with sufficient information on efficiency of professional care of patients and the relation of hospital service to community health needs."—"A Clinic on Hospital Reports," *Modern Hospital*, 6:279–281. (March) 1924.

✤

"A State Social Hygiene Educational Program."—Description of a lecture program reaching elementary, high and normal schools, and colleges.—Edna P. Fox, *Journal of Social Hygiene*, 10:26–33. (Jan.) 1924.

A County Health Fair.—A county fair all for health—and fun—and funds—was held by the Visiting Nurse Association of Somerset Hills, Bernardsville, N. J. There was a cafeteria, a rummage sale and an animal tent. Another tent held exhibits of the visiting nurse work. "An attractive papier mache landscape holds the attention of many, as one of the several volunteer explainers points out the bedside nursing demonstration in the home at the foot of the hill, the school nurse on her rounds, part way up the hill, the child hygiene instruction on the left and the instructive work in the care of communicable diseases at the top of the hill.

"The miniature outfit for the expectant mother holds a prominent yet quiet spot in which an uninterrupted conference may be held with the inquirer. An outfit prepared by one of the staff nurses, for use in instructing the prospective mother in what to prepare for herself and baby composes the exhibit. This miniature exhibit is easily packed in a small box and carried about in a Ford car.

"Outside of the tent the passerby is attracted by a 3x3 foot poster of 'What Makes a Visiting Nurse,' and a three leaf, 3x3 foot size, book shows how the territory and activities have so rapidly yet steadily expanded.

"On the extreme right of the tent, facing out, is a small booth with a real twelve number wheel and in the background a gay array of attractive prizes. Spinning the wheel and receiving a prize corresponding to the number on which the wheel stops, they anxiously search the back of the colored tag for a health message written thereon. Turning over the tag, you have the name of the association, the location of the superintendent's office and the telephone numbers of the various districts."

The last paragraph of the quoted description prompts several questions. Is it wise, all things considered, to use games of chance even to raise money for "good causes"? Is it wise to use the games of chance to teach health provided no prizes of intrinsic worth are given, or if no prizes at all are offered? Are there substitute attractions having amusement value which can be substituted for use at fairs and expositions? Have the readers of the JOURNAL any opinions on the subject?)—"A County Health Fair," Nellie Ogilvie, *Nation's Health*, 6:181–182. (March), 1924.

✤

A Score Card for Dad.—A scoring to help you "find your rating as a real Dad," issued by the H. and S. Club, Union Springs, N. Y., includes the following:

TWENTY POINTS FOR CARE OF PHYSICAL NEEDS AND DEVELOPMENT OF BOY

For providing a definite program of physical activity adequate for your boy	5
For a specific plan of operation for the establishment of fundamental health habits	5
For annual physical examination, including eyes and teeth	5
For personal participation with the boy in outdoor sports and games	5

Child Welfare Magazine, 18:383. (April), 1924.

✤

Publicity for Schools for Nurses.—Twenty-five articles and editorials are listed in a recently compiled bibliography called "Publicity Campaigns—Schools for Nurses." It is supplied free by Hospital Library and Service Bureau, 22 East Ontario St., Chicago. The Bureau offers a list of references on "Propaganda for Oral Hygiene" in addition to its regular service on many phases of hospital, clinic, dispensary and public health problems. Better ask Miss Donelda R. Hamlin, director, for a list of the lists.

✤

Another List of Health Books.—A contribution from the standpoint of the nurse is "Broadcasting Health Through Books" with a selection of 250 volumes.—Meta R. Pennock, A.B., *Trained Nurse and Hospital Review*, 72:156–164. (Feb.), 1924.

✤

All Ways to Health in Detroit.—The fascinating details of a program whereby "health is receiving honorable mention in the talk of the town and is being made one of the games of the playground" are related in Health-Educating Detroit Children. Three illustrations of informal dramatization which provide fun and wholesome exercise.—Ethel Perrin, *Nation's Health*, 6:177–178. (March), 1924.

PUBLIC HEALTH LEGISLATION

JAMES A. TOBEY, LL.B.

Commissions for Sanitary Engineers.—Any possibility that the sanitary engineers of the U. S. Public Health Service will get a commissioned status during this session of Congress seems to have gone a-glimmering. Some months ago the American Public Health Association appointed a committee consisting of Dr. Victor C. Vaughn, Chairman; Dr. Haven Emerson; Dr. G. T. Palmer; Mr. James A. Tobey; Mr. Sol Pincus, and Mr. Morris Knowles to act on behalf of the Association in attempting to get such commissions for the engineers. This committee met in January in Washington, with representatives of the American Society of Civil Engineers, the Federated American Engineering Societies, and some of the engineers of the service, and considered critically a bill which was proposed by the Surgeon General, and decided to support this bill. The entire delegation then called on the Assistant Secretary of the Treasury, Mr. Eliot Wadsworth, and discussed the matter with him, the Surgeon General, and Assistant Surgeons General Kerr and Draper. It was stated that the bill had the endorsement of the Treasury Department.

The next step came when the Assistant Secretary of the Treasury informed the members of the committee on March 21st that the proposed bill had been sent according to law to the Bureau of the Budget, and that the Director of the Budget had stated that the proposed legislation was submitted to the President, who instructed the Director to advise the Treasury Department that it was in conflict with the President's financial policy. In view of this action, the Treasury Department could not recommend the remedial legislation.

A copy of the proposed bill managed to get into the hands of Senator Copeland, however, who promptly introduced it in the Senate (S. 3027). Dr. Copeland had previously introduced a bill (S. 1687) which would grant commissions to the sanitary engineers. The Secretary of the Treasury has refused to endorse this latter bill, because it is not as inclusive as the other and he cannot approve the other bill for the reasons stated above. So there you are. Neither bill has any chance of being considered favorably without the support of the Department. Even if the bill were approved by the administration, it might be doubtful whether Congress could be deviated from its orgy of investigations to consider such really constructive health legislation.

✤

Promotion of Efficiency of the Public Health Service.—The Copeland bill (S. 3027) previously mentioned, provides that the Surgeon General may detail medical and sanitary personnel to other government departments at their request. It provides for the appointment of not to exceed 250 reserve officers, including not more than 50 sanitary engineers and not more than 50 dental surgeons and other scientists, to the regular corps. The total number of officers would become 475 and a nurse corps would also be established. The methods for commissioning, promoting, and retiring officers are outlined in detail. A bill similar to this was introduced at the last session but was not acted upon. It will be seen that increase in financial obligations to the government by this bill is not very great.

✤

Control of Corrosives.—H. R. 7822. A public health bill of unusual importance is a measure recently introduced by Representative W. W. Griest of Pennsylvania, to place under federal control the shipment and sale of corrosive acids, alkalies and lye. The only two states which now have regulatory legislation on this subject are Pennsylvania and Florida.

It is a well known fact that hundreds of lives are lost annually through the careless handling of lye and similar products, and that children are often innocent victims. The lye frequently comes in cans similar to containers used for food, and in this way many fatalities occur.

The purpose of Representative Griest's bill is to place the shipment and sale of more than a dozen specific alkalies under federal regulation by requiring the word "POISON" to be printed in capital letters on the label or sticker in a contrasting color from the remainder thereof. Directions must also be printed for treatment in case of accidental injury.

A similar bill (S. 3112) has been introduced in the Senate.

Venereal Disease **Control.**—House and Senate finally agreed to the provisions for an appropriation of $149,000 for the Division of Venereal Diseases of the U. S. Public Health Service, contained in the Treasury Department Appropriation bill. This will permit the government to continue cooperation with the states in the control of the venereal diseases.

H. R. 8144. A peculiar bill proposing that no compensations be paid veterans for injuries or diseases incurred on account of their own willful misconduct, except that venereal diseases contracted prior to entering the service, should be compensated, has been introduced by Representative Brand of Georgia. The bill also makes provision for tuberculosis and neuropsychiatric disease developing a 10 per cent disability.

✤

Regulation of **Serums and Antitoxins.**—H. R. 8618. This bill would amend existing law by prohibiting false labels or marks on containers of viruses, serums, and antitoxins, and also false advertising concerning such products, which are used in interstate commerce and the District of Columbia.

✤

Enforcement of **Prohibition.**—The regulations which control in the Federal Enforcement of the National Prohibition Act have been revised. In their new form they become effective May 1st, and are known as Regulations 60. This is the first revision which has been made by the Federal Government authorities since January 17, 1920, the date when the Volstead Law went into effect. These regulations definitely fix the authority of physicians who prescribe intoxicating liquor. A physician is described in the regulations to mean any person who has a license to practice medicine in any state, territory, or District of Columbia. The definition does not include any osteopath, chiropractor or dentist. The new regulations include the following changes with respect to physicians:

Liquor obtained on prescription and bearing label required by the regulations may be lawfully possessed by the person for whom prescribed, or by another member of the patient's household (including a nurse or servant) for administering to the patient.

A physician who is licensed to practice under the laws of two or more jurisdictions and desires to prescribe intoxicating liquor in all or any of them other than the one in which he procures his permit to prescribe, should in his application for such permit name the jurisdictions in which he wishes to so prescribe. Notice of the issuance of such permit will be given to each director in whose state it is effective.

Where the druggist or pharmacist, whose name appears in the prescription issued by a physician for intoxicating liquor does not have on hand the liquor of the kind specified in such prescription, such druggist or pharmacist may indorse thereon the name of another druggist or pharmacist duly licensed to sell such liquor. The druggist filling such prescription shall immediately notify the issuing physician of such fact.

In case of a grave and sudden emergency where great suffering or loss of life might result from the delay incident to writing upon the proper form of prescription blank or emergency prescription the full details of the emergency, a physician may write in lieu thereof the words "grave emergency" and forward to the director, with the duplicate copy of such emergency prescription a statement of the details of the emergency.

✤

SOME RECENT COURT DECISIONS

Liability of Health Officials.—The highest court in Oklahoma has held (City of Shawnee v. Jeter, 221 P. 758) that generally a city is not liable for the negligent acts of its duly constituted health officers in handling and caring for contagious diseases, as the care of persons afflicted with such diseases is a governmental function. This case was an action for death of the inmate of the city hospital who was alleged to have contracted smallpox due to the carelessness of the persons in charge and the city health officers in taking care of other patients so afflicted. A city is never responsible legally for acts of its officials when acting for the city in a governmental capacity, but the officers may be individually liable for neglect or carelessness.

✤

Chiropractor Guilty of Manslaughter.—A chiropractor who essayed to treat a child with diphtheria and who, on account of his ignorance of the nature of the disease and his failure to use proper methods, allowed the child to die, was found guilty of manslaughter in the Supreme Court in Brooklyn on April 8th. Sooner or later chiropractors and Christian Scientists will learn that the only sane way to treat diphtheria is by the early administration of antitoxin. There have been numerous instances of deaths due to "treatment" of diph-

theria according to the methods of these cultists. A few more convictions for manslaughter would have a salutary effect and would lower the death rate from this disease.

✤

A Sanipractor Liable for Malpractice.—Apropos of the case reported above, a plaintiff in Washington (Wilcox v. Carrol, 219 P. 34) received a judgment for $2,500 damages from a sanipractor (whatever that is) for mistreatment due to ignorance and negligence. The disease in this case was said to have been appendicitis. As pointed out in an editorial in the March JOURNAL these various (and absurd) cultists are a menace to the public health. This particular case is reported in full in the Journal of the American Medical Association for April 12, 1924 (medico-legal section).

✤

"HEALTH AND THE LAW"

A brief article under this caption appears in the Docket of the West Publishing Company, a well-known publisher of law books, for February-March, 1924. The author, Radcliffe Swinnerton of the New York Bar, advocates 100 per cent healthfulness for all lawyers. "Sound Health," he writes, "is easily maintained and easily lost. It is not something which, once acquired, can be forgotten. It is no respector of persons, and must be thought of daily by everyone." Even sanitarians can find food for thought in that.

✤

A LEGISLATIVE COMMITTEE OF DOCTORS

The National Committee for Mental Hygiene has appointed an advisory Committee on Legislation for 1924. The duties of this committee will be to draft a model commitment law. The committee is composed of five physicians and one lawyer. No doubt when the National Committee for Mental Hygiene appoints its next committee on medical problems it will be composed of five lawyers and one doctor.

✤

CONVENTIONS, CONFERENCES AND MEETINGS

This calendar is published through the coöperation of the National Health Council, 370 Seventh Avenue, New York City. The Council will be glad to answer promptly any written or telegraphic inquiries regarding meeting dates in order to avoid conflicts.

June 30-July 1, National Federation of Day Nurseries, Toronto, Canada.

June 3-6, American Psychiatric Association, Atlantic City, N. J.

June 3-13, General Federation of Women's Clubs, Los Angeles, Cal.

June 5-7, American Pediatric Society, Pittsfield, Mass.

June 5-7, American Neurological Association, Philadelphia, Pa.

June 6-7, American Therapeutic Society, Toronto, Canada.

June 7, American Psychopathological Association, Philadelphia, Pa.

June 5-7, American Dermatological Association, Minneapolis, Minn.

June 9-10, Surgeon General's Conference with State Health Officers, Chicago, Ill.

June 9-10, American Association of Medical Milk Commissions, Chicago, Ill.

June 9-10, American Society of Tropical Medicine, Chicago, Ill.

June 9-13, American Medical Association, Chicago, Ill.

June 9-14, Congress of Anesthetists, Chicago, Ill.

June 14, Eugenics Research Association, Cold Spring Harbor, L. I., N. Y.

June 16-17, State and Provincial Health Authorities, Lansing, Mich.

June 16-21, Biennial National Nursing Convention, Detroit, Mich.

June 17-20, National Eclectic Medical Association, Cincinnati, O.

June 23-26, Annual Conference of New York State Sanitary Officers and Public Health Nurses, Saratoga Springs, N. Y.

June 24-25, National Association of Travelers Aid Societies, Toronto, Canada.

June 25-July 2, National Conference of Social Work, Toronto, Can.

June 26-July 2, American Association of Hospital Social Workers, Toronto, Canada.

June 29-July 5, National Education Association, Washington, D. C.

June 30-July 4, American Home Economics Association, Buffalo, N. Y.

June 30-July 5, American Library Association, Saratoga Springs, N. Y.

June —, National Probation Association, Toronto, Can.

August 5-7, International Union Against Tuberculosis, Lausanne, Switzerland.

August 19-22, National Association of Colored Graduate Nurses, Buckroe Beach, Va.

August 26-29, National Medical Association, Hampton, Va.

October 14-16, American Child Health Association, Detroit, Mich.

October 20-23, American Public Health Association, Detroit.